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Chemical Week

August 30, 1958

Price 35 cents

New analytic photometer charts 1-in-10-billion chloride levels. Its applications . p. 27

Water desalting processes get set for large-scale commercial use . . . . . p. 31

Giant chemical distributor formed as McKesson buys another wholesaler . . p. 46

New red pigments debut. Key to superior light-fastness: crystal structure . . . . p. 49

Perchlorethylene goes ahead in dry cleaning usage. By '65, it will dominate field . . . 61

E P POWER
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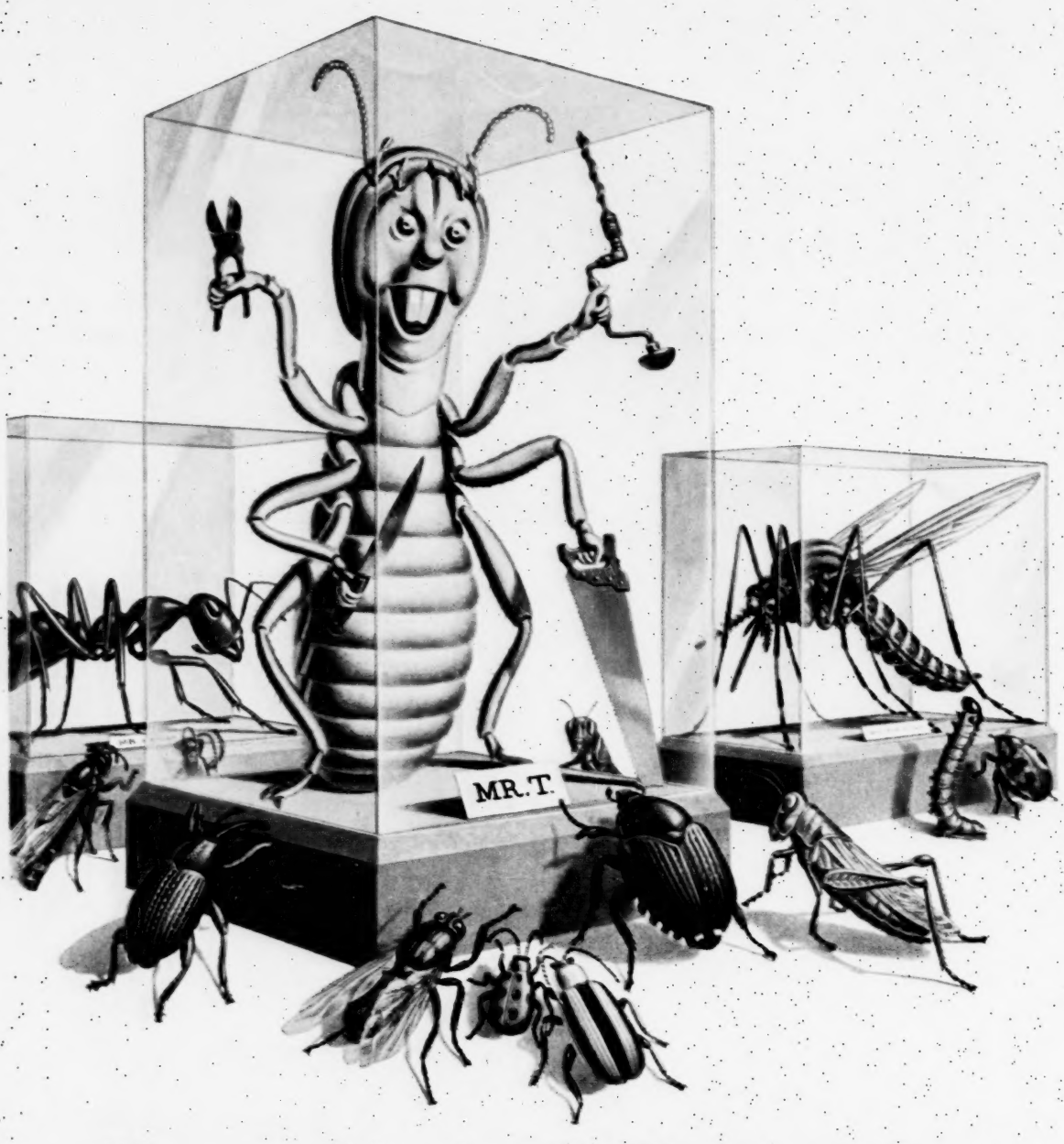

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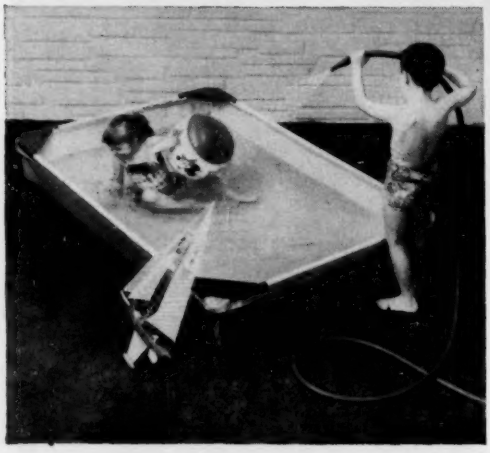

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Chemical Week

TOP OF THE WEEK

AUGUST 30, 1958

New producer of polypropylene—Humble Oil. The Standard of New Jersey affiliate is building a 40-million-lbs./year plant in Baytown, Tex. .....p. 17

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Supersensitive chloride ion detector, developed for nuclear power plant, now needs a manufacturer .....p. 27

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18 On the antitrust front: Sherwin-Williams calls price-fixing charge 'unfounded'; lawyer for GM stockholders endorses Du Pont's ownership of GM shares.

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COVER PHOTO COURTESY DU PONT MAGAZINE

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VIEWPOINT

THE ROSTER OF FIRMS that have made strong contributions to the nation's rocket program is studded with familiar chemical industry names. But there are some conspicuous absences, too.

The question: Is the industry as a whole contributing to the full extent of its capabilities? Some leading authorities in government as well as industry answer a resounding "no."

Assuming they are right—how come? Here are some reasons. It's true that rockets represent a potentially tremendous market for chemicals, 80% of a "solid" rocket engine consists of propellents, which are rather high-priced chemicals. But the market isn't the repetitive type that justifies a plant. It has been said that if you plot the consumption of a successful propellent against time, you would draw a bell-shaped curve.

Demand would rise slowly, pick up rapidly as test programs got under way, reach a peak as the defense arsenal was being stocked. Then it would quickly fall and finally trail off, when consumption would be confined to replacement.

Another deterrent is the problem of dealing with the government. As many have learned in the past, this can be a frustrating, thankless task.

But all of these arguments concentrate on the short range. Certainly, there are no greater long-term challenges than those laid down by the program—taming free radicals and metastable compounds or developing inorganic elastomeric polymers to act as oxidizers, for example.

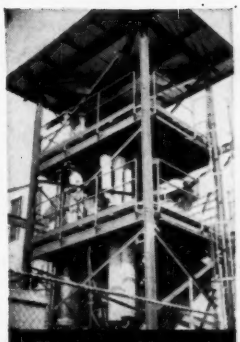
There's little doubt that most of these will be met in time. Invaluable technology for chemical companies will be the payoff. And the firms that do the most now will be first to receive the rewards.

H C E Johnson

Editor-in-Chief

When higher efficiency suggests a fluid-bed process . . .

. . . it's a job for Vulcan-Cincinnati



The plant pictured at left employs a new fluid-bed process to produce Barium Oxide.

Difficulties encountered in the original start-up prevented production of a saleable product at profitable capacities. At this point Vulcan-Cincinnati was called upon for assistance because of their wide range of experience with fluid-bed operations (for example, the Atlantic-Vulcan fluid-bed process for direct oxidation of ethylene to ethylene oxide).

Through the coordinated efforts of Vulcan-Cincinnati and Barium Reduction Corp. engineers, the plant is now operating at more than design capacity producing Barium Oxide with a product purity of *97 to 99%!* This high product purity is in sharp contrast with the results achieved by earlier methods.

For fluid-bed processing, barium carbonate is prepared in pellet form. The pellets are fed into a tube, agitated into a fluid state by jets of nitrogen, and subjected to very high temperatures. Pressure is atmospheric, and no catalyst is used. Now that the plant has been made operational, this method enables Barium Reduction Corp. to produce high-grade Barium Oxide at an extremely low cost per ton of capacity. It is this kind of success that is leading more and more companies to bring their process problems to Vulcan-Cincinnati.

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OPINION

Keep Off the Grass

To THE EDITOR: The research department of American Smelting and Refining Co. has recently established a "grant-in-aid" with the animal husbandry department of one of our leading argicultural colleges for the purpose of screening materials for their effectiveness as livestock repellents [i.e., to keep livestock away from grazing areas that have been sprayed with toxic herbicides]. We have found that very little research has been conducted in this field, and we are of the opinion that there is a definite need for such a material or materials.

We would like to solicit additional candidates for screening from anyone who thinks they might have an effective material.

HARROLD B. JONES
2772 Natchez Lane
Memphis, Tenn.

Information concerning the procedure for submitting compounds may be obtained from Reader Jones at the above address.

Waxing Complete

To THE EDITOR: In your report "Will Waxes Meet the Production Challenge?" (*July 19, p. 47*) we regret that the Biwax Corp. is not included in the listing of Blenders and Formulators. The Biwax Corp. has been formulating wax compounds for the electrical and electronics industry for 30 years. . . .

P. H. SCRUTCHFIELD
Biwax Corp.
Skokie, Ill.

To THE EDITOR: I see our old friend, Maurycy Bloch—whose scholarly and informative article brightens your pages (*July 19, p. 47*)—is labeled as "probably the only top management figure in the U.S. wax industry today who can claim a four-generations-old wax heritage."

Well sir, you should know that there is another—none other, in fact, than Samuel C. Johnson, great grandson of the founder of Johnson's Wax, whose name he bears.

Sam is vice-president of our Service Products Division and a member of our Management Committee, which, I think, qualifies him for a niche alongside Mr. Bloch. . . .

WILLIAM N. CONNOLLY
Vice-President
S. C. Johnson & Son, Inc.
Racine, Wis.

To THE EDITOR: I would question the photograph you used in the pipe bend (*July 19, p. 47*). . . . While I know some wax may still be handled in this manner, the use of hand wagons and slabs in this manner has almost passed. I would have preferred a picture of a wax tank truck or one of the modern slabbing machines such as have been installed by many of the paraffin producers.

JOHN B. TUTTLE
Sales Engineering
Esso Standard Oil Co.
New York

Equitable Taxation

To THE EDITOR: I was much impressed by your staff article, "Co-ops Move In on New Fertilizer Territory" (*May 17, p. 83*). In my opinion, this factual article publicizes a situation that has become very serious to the chemical industry and one that most individuals and organizations have been hesitant to commit themselves on. You may recall that Manufacturing Chemists' Assn. made quite a point of equitable taxation, both for co-ops and for private corporations, at the time it testified on tax legislation before the House Ways & Means Committee earlier this year.

Your excellent editorial (*Aug. 2, p. 13*) brought the matter to my mind again, and I would be remiss if I did not extend my congratulations to you.

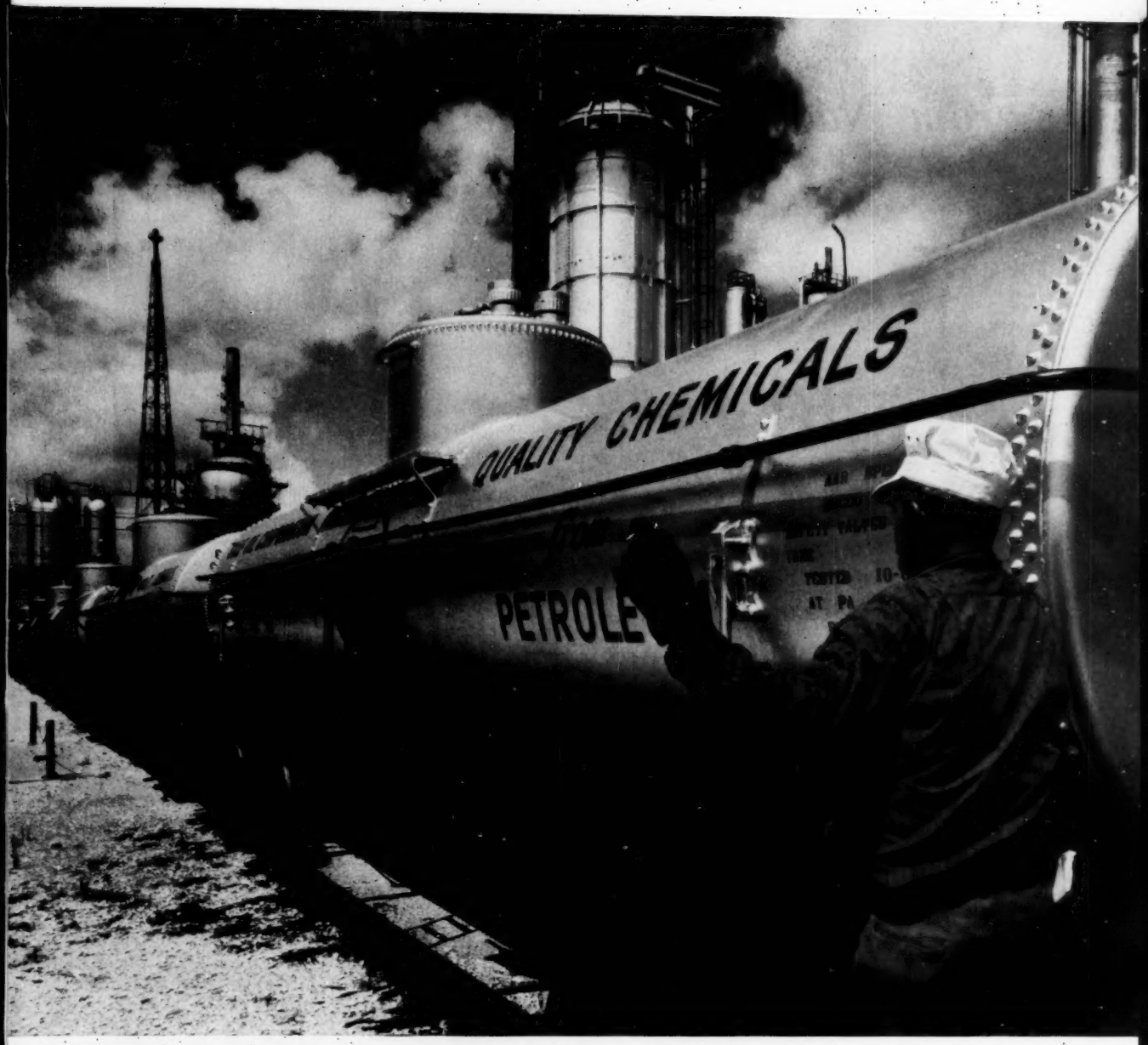
M. F. CRASS, JR.
Secretary-Treasurer
Manufacturing Chemists' Assn., Inc.
Washington, D. C.

MEETINGS

"Atoms for Peace," second international exhibition, Geneva, Switzerland, Sept. 1-14.

American Chemical Society, 134th national meeting, Chicago, Sept. 7-12.

DCAT, 68th annual meeting, Sagamore Hotel, Lake George, N.Y., Sept. 11-14.



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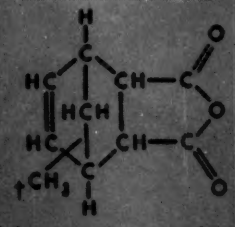

† the methyl group replaces one of the hydrogens

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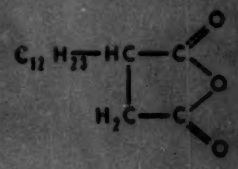

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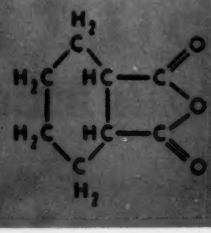

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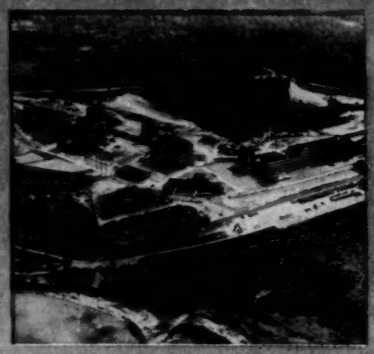

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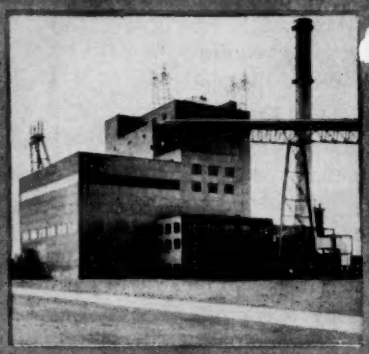

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Business Newsletter

CHEMICAL WEEK
August 30, 1958

Liquid propellent prospects got a boost last week when the Navy awarded Reaction Motors (division of Thiokol) a production contract for its Guardian liquid-fueled rocket.

The contract probably is not large—something over $1 million. But it's the first one awarded for a "packaged" liquid rocket—i.e., one that contains both fuel and oxidizer, can be delivered and stored "ready to fire." This feature has been one of solid fuels' chief advantages over liquids. The packaged propellent, moreover, is "hypergolic"—ignites when fuel and oxidizer meet—eliminating the need for an ignition system.

The guardian is small (air-to-air-missile size), but Reaction Motors says its design can be applied to cover most missile requirements.

•

Highly diversified Olin Mathieson will sell some of its operations during the rest of '58. Exactly which ones will go on the block was not disclosed. The company hopes proceeds from such sales will offset the $10.2 million in deferred preoperating expenses—relating to start-up of OM's new alumina and aluminum plants—to be charged off in the third and fourth quarters.

•

Russia is reshuffling its top chemical officials. The shifts are probably part of the drive to beef up the chemical industry, especially in plastics and fiber output. The minister of the chemical industry, V. Tikhomorov, has been demoted to deputy. His new boss: V. S. Federov, formerly deputy minister for oil.

In his call for greater chemical progress last May (*CW, June 7, p. 13*), Premier Khrushchev laid part of the blame for Russia's petrochemical lag on Tikhomorov. The Chemical Ministry, he charged, built comparatively small chemical plants to use refinery gas, ignoring the vast potential of less expensive oil field and natural gas. And the ministry scrimped on capital investments for newer branches of the industry, the party boss told the Central Committee.

CPI growth in the satellites will aid the Russian plan. Khrushchev made this clear in a recent speech in East Germany, when he declared that German equipment and technology would be put to work converting Russian raw materials into synthetic fibers. His concept of Iron Curtain chemical cooperation is already being implemented in such projects as the pipeline from Rumanian gas fields to Hungarian chemical plants, the exchange technical training programs, and the planned East German-Rumanian-Czech-Polish cellulose plant to be built in Rumania.

The Communist CPI is getting indirect help from the U.S. Part of the Export-Import Bank's recent $200-million loan to Poland will

finance a "substantial" order for rayon spinning machines, placed last week with Von Kohorn International (White Plains, N. Y.).

•

American Cyanamid has a new board chairman and a new Process Chemicals Dept. The new chairman is lawyer-businessman Thomas Perkins, a director since 1951. He replaces Kenneth Towe, who retired last April. The Process Chemicals Dept. was formed within the Industrial Chemicals Division by merging the Heavy Chemicals and Manufacturers Chemicals departments.

Procter & Gamble increased sales to $1,295.2 million for the fiscal year ended June 30, according to its annual report out this week. This is a gain of 12% over the previous year. Profits also hit a new high: $73.2 million, compared with $67.8 million in the '56-'57 period.

Board Chairman Richard Deupree and President Howard Morgens said the company's good showing throughout the recession resulted from "wide diversification of products" and "strong organization."

•

There's less gloom in the metals industry this week.

Though Congress killed the $458-million minerals subsidy bill (*see p. 19*), Kennecott Copper reports it will increase the work week at its mines in Utah, Nevada, Arizona and New Mexico from five days to six because of "improving business." Though most other producers did not comment, an official of Phelps Dodge, second-largest copper miner in the U.S., said that August would be the year's best copper month so far.

•

Susquehanna Corp. (Chicago) will acquire Vitro Minerals Corp., jointly owned subsidiary of Vitro Corp. and Rochester & Pittsburgh Coal Co. (Indiana, Pa.), through an exchange of stock.

Under the agreement, the number of Susquehanna shares to be exchanged for all Vitro Minerals' outstanding stock is based on the total mineral resources mined from Vitro Minerals' properties in the Gas Hills area for processing at Susquehanna's Riverton, Wyo., mill.

•

Pacific Vegetable Oil Corp. will produce polyurethane through a newly acquired interest in Polytron Corp. In addition to manufacturing its present line, the new affiliate will work on new types of urethanes. Good bet: derivatives incorporating castor oil, one of PVO's chief products (*CW, April 27, p. 84*).

•

Short takes from all over: Du Pont has now recalled 188 previously laid-off employees at its nylon plant at Seaford, Del., noting that more textile orders are coming in. . . . Celanese Corp.'s polyethylene plant on the Houston Ship Channel is closed down this week following Sunday's two-hour flash fire that seriously injured four operators. . . . Mexico's post office is considering a plan for chemical cancellation of stamps on letters.

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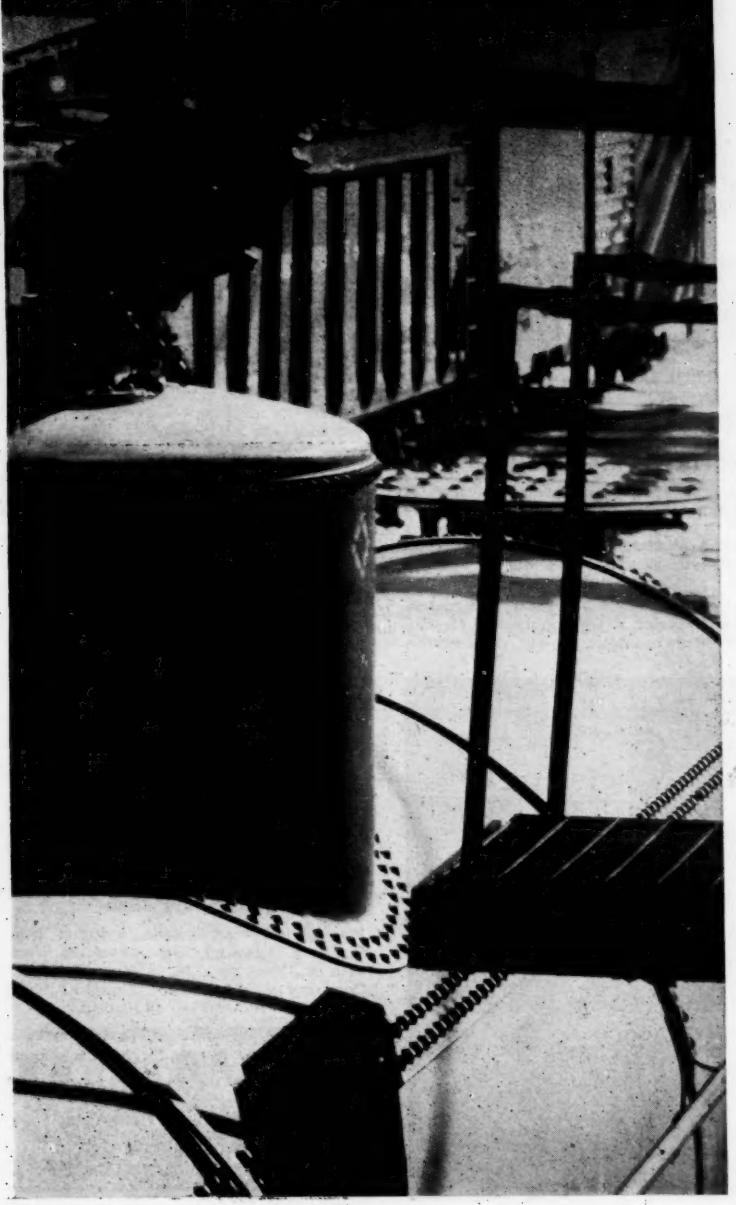

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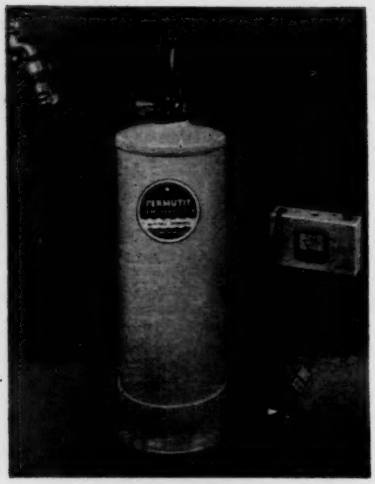
The Permutit laboratory or lecture-table kit includes a 1½" O.D. glass tube with one end drawn down to fit ordinary laboratory rubber tubing, the ion exchange resin or resins required and literature describing ion exchange experiments. The user supplies the

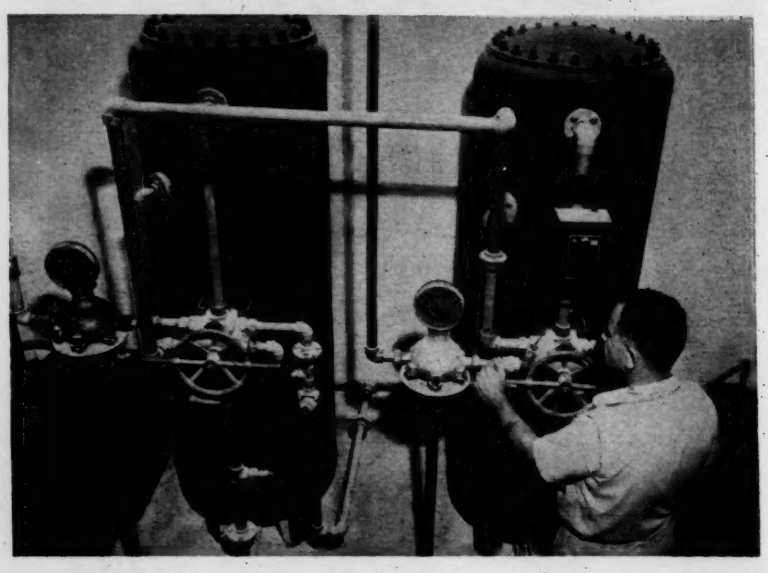
stand, clamps, tubing, stoppers and beakers. The tube will hold sufficient Permutit Q ion exchange resin to remove 20 to 25 grains of hardness.

This simple set-up is used for demonstrating ion exchange processes such as softening, dealkalizing or demineralizing water and for experiments in removal of impurities from process solutions and separation of metals from leached ores or waste liquids.



MBD-6A mixed bed demineralizer

The MBD-6A unit (6" diam.) contains a mixture of Permutit Q cation exchange resin and Permutit S anion exchange resin. It will demineralize 1 to 2 gpm of water to a low total solids, low CO_2 and low silica content. Refills containing pre-mixed resin are available. Each refill has a capacity of approx. 1500 grains total electrolytes as $CaCO_3$. When the unit is exhausted, the fill may be discarded or regenerated and re-used.



A conductivity cell is mounted in the outlet line to be used with a conductivity meter for measuring the electrolyte content of the effluent and thus indicating when the resin bed is exhausted.

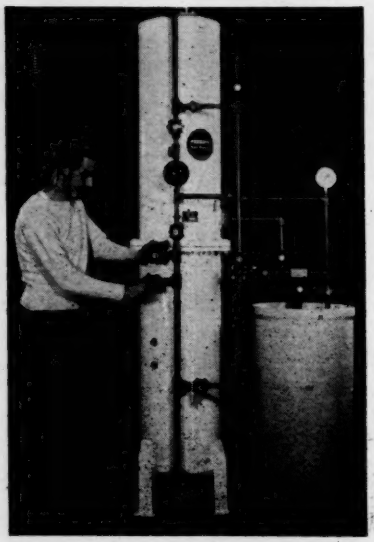
Standard equipment includes the MBD-6A with initial fill, faucet adapter and hose and conductivity cell. Optional equipment: conductivity meter, resin refills and an auxiliary tube for regenerating the resins.

MBD-15 mixed bed demineralizer

This compact unit will demineralize 6 to 7½ gpm of water to an average conductivity of 0.15 micromhos (approx. 6,000,000 ohms specific resistance per cm or 0.05 ppm total electrolyte content). CO_2 will be reduced to 0.1 ppm and SiO_2 to about 0.1 ppm.

Capacity of the MBD-15 between regenerations is approx. 20,000 grains total electrolytes. For example, it will demineralize 3420 gallons of water containing 100 ppm total electrolytes or 1710 gallons containing 200 ppm total electrolytes. When the unit is exhausted, the resin bed can readily be regenerated without removing the resins from the tank. The plastic regenerating tank is used for both regenerants.

The MBD-15 is supplied piped and partially assembled and requires connecting together only 3 flanges other than the connections to influent, effluent and waste lines.



16", 24" and 30" diam. single bed units
(see photo above)

Diameter of unit	16"	24"	30"
Approx. flow rate (gpm)	10	20	30

Construction of these "package" units is of the same heavy-weight materials used for Permutit's large custom-designed units and includes rugged PVC plastic interior piping and plastic strainers, full 3/16" thick rubber lining steam-cured and vulcanized to the heavy gauge steel shell. The entire lining is spark-tested at 25,000 volts. Exterior piping is high strength plastic.

Standard equipment includes a rubber-lined Permutit multiport control valve for each unit, acid pump, corrosion-proof plastic tank for cation regenerant and steel tank for anion regenerant. All parts are normally kept in stock for immediate shipment and are described in standard drawings.

• • •

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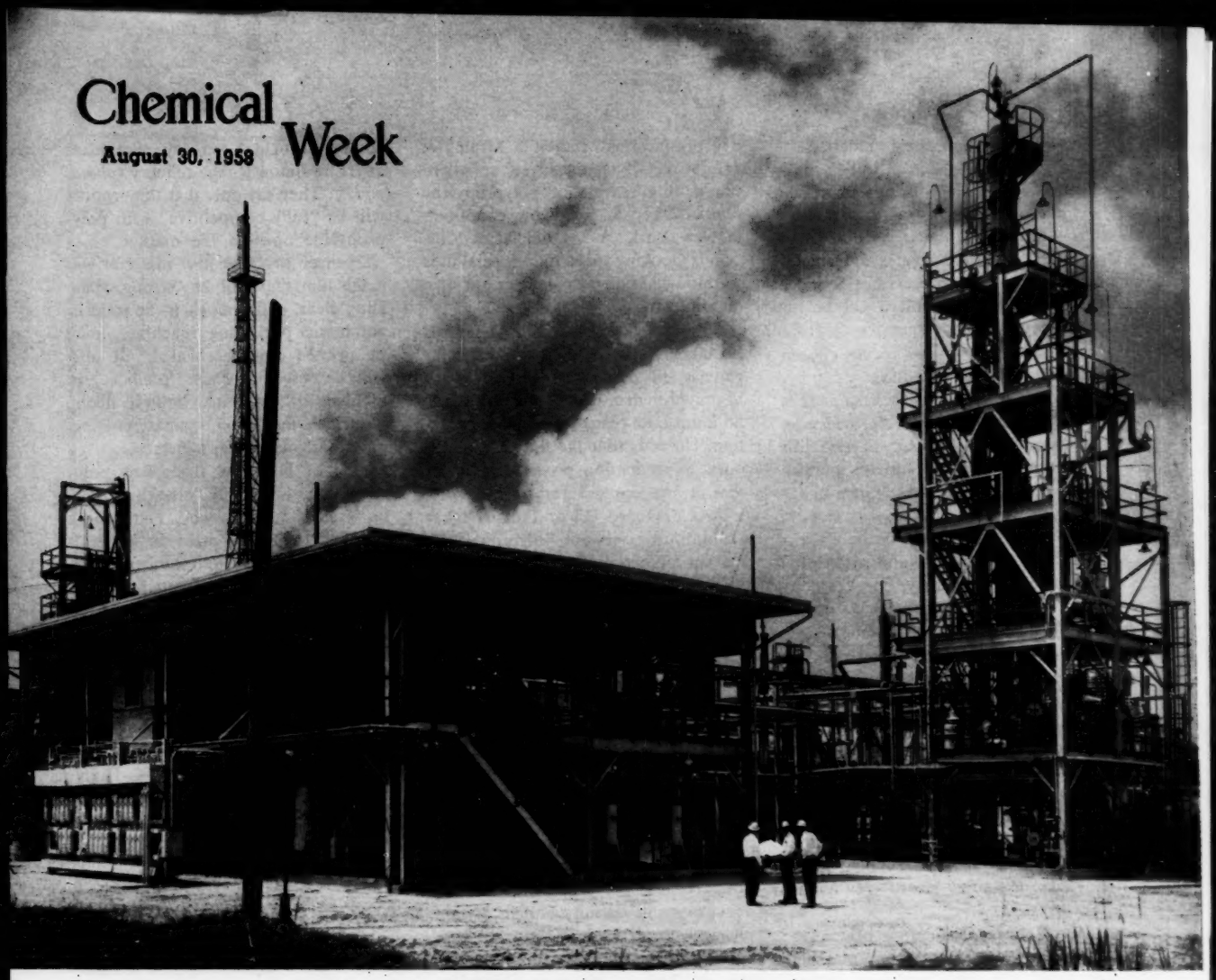
Chemical Week
August 30, 1958



At Esso's Baton Rouge refinery, this 1-ton/day pilot plant is testing process to be used in . . .

Setting Up a Second Polypropylene Source

For polypropylene, the petrochemical plastic that's likely to be one of the biggest success stories of the next decade, the shape of things to come is moving into focus as industry sizes up last week's three big developments:

• Humble Oil & Refining Co. — subsidiary of Standard Oil Co. of New Jersey—early next year will start building a 40-million-lbs./year polypropylene plant (*CW Technology Newsletter, July 12*). It's expected to be on-stream by the end of '59.

• Enjay Co.—subsidiary of Esso Standard Oil (a Jersey Standard affiliate)—and Spencer Chemical Co. will market Humble's output.

• Hercules Powder Co.—now the only U.S. producer of polypropylene —is cutting prices 7¢/lb. and is offering three new types of polypropylene resins.

Industry sources now think that within two years there will be as many as five U.S. producers of polypropylene, with total capacity of 150-200 million lbs./year, and that by '65 U.S. capacity may be something like 300-350 million lbs. Price is expected to slide to about 35¢/lb. And there will probably be two mad scrambles among polypropylene companies—one for markets, the other for recognition of patent claims.

Humble will build its new plant in the "petrochemical area" at Baytown, Tex., where its 282,000-bbls./day petroleum refinery is located. Already operating in that area: three formerly government-owned plants producing butadiene, butyl rubber and solvents. The polypropylene unit will be designed for possible expansion to 100 million lbs./year.

Propylene from the refinery will be piped into the new plant and polymerized by a process developed by Esso Research & Engineering Co. This process uses a Ziegler-type catalyst and will be licensed from Karl Ziegler, director of Germany's Max Planck Institute for Coal Research. ER&E says it has "added features making the process distinctly superior to the one originally revealed."

Doubling Up on Distribution: Enjay will market Humble's polypropylene through its sales outlets in the U.S. and abroad. Plastics industry sources predict that export sales will be siza-

ble, despite European production.

In addition, Enjay will supply Spencer with polypropylene for resale —under the Spencer tradename, Poly-Pro—throughout the U.S. This is covered by a four-year sales agreement, somewhat of a surprise since Spencer is a licensee of Standard Oil of Indiana's polyolefin patents.

But Spencer is still to be classed as a prospective producer of polypropylene. A company spokesman tells *CW* the sales agreement "provides an opportunity for Spencer to establish a marketing position and to appraise the desirability of capital investment in facilities." He says the agreement with Enjay will have no effect on Spencer's polyethylene and nylon programs; on the contrary, Spencer considers that polypropylene neatly rounds out its line of thermoplastics.

Second Price Cut: When Hercules' $7-million, 20-million-lbs./year Parlin, N.J., plant came onstream last December, the company put a 65¢/lb. price tag on its output. Four months later, the price of noncolored resin was dropped to 56¢; and this week's 12½% reduction brings the price down to 49¢/lb. Colored molding powders now sell at 58¢. Linear polyethylene is now priced at about 43¢/lb.

Hercules says it is cutting prices "to further broaden the diverse markets developed for polypropylene," anticipates that still lower prices will be forthcoming before '60. And Hercules —which feels it holds a basic patent position in polypropylene—adds that its Parlin unit "can be expanded very readily."

Not Napping: Union Carbide's Bakelite Division and Du Pont's Polychemicals Dept. have long been surveying the polypropylene situation but aren't talking about their findings.

Bakelite—whose polyethylene plant at Seadrift, Tex., is believed to be at least partly convertible to production of other polyolefins—acknowledges that it's carrying on "continuing investigations" relating to polypropylene.

Du Pont says it does not now have a polypropylene plant project under study and—despite industry talk to the contrary—probably will not be producing this plastic within the next two years. Du Pont does have a small polypropylene semiworks unit in operation.

Looking for Uses: Another prospective producer is Minnesota Mining & Mfg. Co., which displayed an attention-getting sample of polypropylene film at a recent packaging exposition in New York. A 3M official says his firm is "looking for certain special uses for modified polypropylene of our own manufacture."

Similarly, Goodrich-Gulf Chemicals President L. O. Crockett says his company is still doing "exploration" work in polypropylene development but has no immediate plans for plant construction. He adds that the firm has developed a production process, indicates that it has applied for patents.

And Standard Oil of Indiana takes an optimistic view of polypropylene's market potential, "particularly if its price can be more competitive with that of polyethylene." Standard, in its own words, "is actively pursuing a research and development program on polyolefins, including polypropylene." Its petrochemical affiliate, Amoco Chemicals Corp., "would be involved in ultimate commercialization."

Phillips Petroleum has been studying polypropylene-type materials for several years in laboratories and pilot plants, but says it is not planning large-scale commercial production now "because polypropylene's present deficiencies in stability and in certain physical properties may seriously limit its ultimate markets." If polypropylene production becomes desirable, says Phillips, the company will be in a strong position because of its large propylene output and because of patents issued and applied for.

Tennessee Eastman—another company that has long been looking into polypropylene prospects—is believed to be readying an announcement on this subject.

Stauffer Chemical is doing basic research on polypropylene catalysis systems, has several that are "pretty well along the road," but hasn't yet applied for patents.

Principal catalytic agents in these systems are titanium trichloride (produced by Stauffer, Columbia-Southern and others) and certain organometallic compounds (e.g., aluminum triethyl and aluminum tri-isobutyl). Hercules is licensed by Ziegler to sell the triethyl in the U.S.

'Fully Competitive': The Esso companies are reticent about the properties and selling points of their polypropylene—samples have been coming from a 1-ton/day pilot plant at Esso's Baton Rouge refinery (*photo, p. 17*). They say only that the product will be "fully competitive" with polypropylene now on the market.

Spencer says the new material will make film that will be "strong, sparkling clear, stiff enough to be used in automatic packaging machines, may be printed and heat-sealed." It also will be used, Spencer predicts, in molded articles, tank linings, fibers, electrical insulation, paper coating, pipes and plastic containers.

One of Hercules' three new polypropylenes is said to "offer light color, greater transparency, better heat stability than the previous general-purpose material," and another "gives long-term stability at elevated temperatures." The third—formulated with special stabilizers—has been submitted to U.S. Food & Drug Administration for approval as a wrapping or packaging material in contact with food.

Demand for polypropylene—now foreseen as growing to something like 50 million lbs./year by '60—is likely to spur the fight for recognition of patent rights. It seems certain that scores of patent applications will be in conflict.

Retort on Antitrust

Antitrust activity this week centers around: (1) a heated reply to a complaint charging Sherwin-Williams Co. (Cleveland) and six affiliates with fixing paint prices (CW Business Newsletter, Aug. 23); (2) new developments in the Du Pont-General Motors suit.

Answering the charges for Sherwin-Williams, President Arthur Streudel called them "unfounded in fact and law." "The truth is," he adds, "we have never attempted to control the prices charged by our dealers and jobbers. We will, of course, defend this action."

And, in Chicago, Du Pont gained additional support in its fight for a more liberal plan concerning its 63 million GM shares. Attorney Samuel Cowen, appointed by the court to represent all GM shareholders, proposed a plan almost identical with that of Andrew Dallstream, representing Du Pont stockholders (*CW, Aug. 16, p. 25*). Only major difference: Cowen does not recommend that Du Pont stockholders be allowed to "take down" their *pro rata* portions of Du Pont's holdings.

CPI's Legislative Box Score: What Congress Did in '58

ENACTED:

Social Security—Hike in employer-employee contributions. Benefits raised 7%.

Small Business Administration—Made permanent; loan authority increased.

Antidumping—Easier relief for domestic industry against low-priced foreign imports.

Reciprocal Trade—Basic law extended to mid-'62. Cuts unlikely before '62-'66.

Taxes—Corporate income tax continued at 52% until mid-'59. Repealed: 3% freight tax, 4.5% pipeline oil tax, 4¢/ton tax on coal shipments.

Industrial Alcohol—Modernized internal revenue code rules on output, sales, use.

Defense Minerals Exploration Agency—Continued, for one year, subsidies on some mineral projects.

Defense Production Act—Extended two years, authorizes priorities for defense contractors.

Atomics—Go-ahead for $396-million reactor construction program, also Euratom program giving government backing to firms selling atomic equipment overseas.

Helium—Appropriated $12 million for new helium extraction plant at Keyes, Okla.

Food Additives—Requires pretesting of new additives, permits "safe-level" use of some additives hitherto barred.

SLATED FOR REVIVAL:

Narcotics—Bill strengthening federal control over manufacture, sale of synthetic drugs.

Farm Crop Utilization—Bill to create new agency, provide funds for research on new industrial uses of farm crops.

Co-ops: Bills to end alleged tax favoritism for farm and other cooperatives.

Hazardous Articles Labeling—Would require identification of chemicals in household products; medical group wants industrial products included.

Cosmetics Additives—Would require pretesting for safety by manufacturers.

Drug, Cosmetic Advertising—Would put burden of proof for contested claims on manufacturer, also transfer jurisdiction from FTC to Food & Drug Administration.

Alien Property—Committee hearings in October.

Minerals subsidy—$458 million to support domestic mineral purchases and production.

Wholesaler Discount—Functional discounts for wholesalers, voted down by House committee.

Antitrust—Good-faith competition, premerger notification, federal "fair trade."

Labor—Taft-Hartley amendments and antiracketeering proposals such as Kennedy-Ives bill.

As Congress Quits, Chemical Bills Abound

The Congress that just left Washington was one of the most legislating Congresses of recent years—as the table above indicates. But the lawmakers left behind plenty of undecided chemical issues that will have to be tackled anew next January.

Sure to draw spirited debate in the next session is a bill, patterned after the food additive law, requiring manufacturers to pretest chemicals used in cosmetics. Long a topic of heated discussions between industry representatives and legislators, this is expected to be one of the first issues to crop up again after this year's campaigning is over.

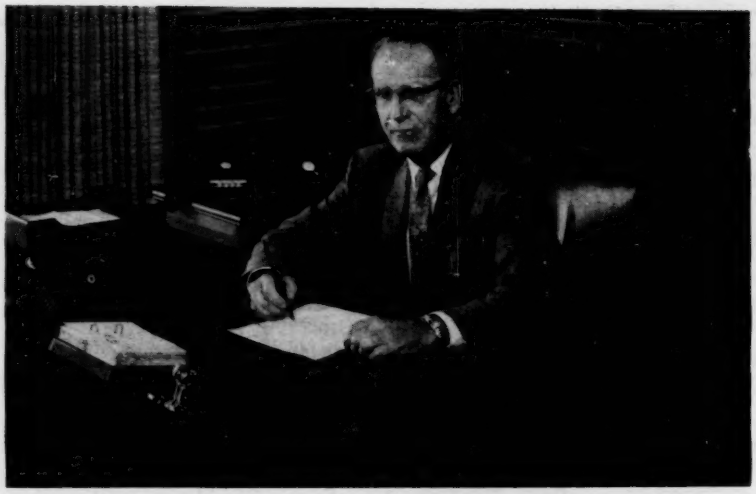
Also, the new Congress is expected to step in and help clarify the Food & Drug Administration's controversial policy on the use of coal-tar colors in food, drugs and cosmetics. That policy—the so-called "harmless per se" doctrine—currently is being challenged in the courts, because it bars manufacturers from using even small, safe amounts of coal-tar colors that are harmful only in large quantity.

Another bill almost certain to be revived is the city-backed plan to boost federal grants for construction of municipal sewage treatment plant from $50 million/year to $100 million/year under a renewed 10-year program. Although this bill has gathered considerable support, President Eisenhower will fight it. He wants the states to take over the program, even though most governors have expressed reluctance to do so.

Saline water research is in for its biggest year yet. Research funds have been boosted 50% to about $1 million this year; Congress has given the green light to a $10-million demonstration plant construction program. The Interior Department can't take advantage of this money until Congress appropriates the actual funds early next year.

Moreover, other government agencies, such as the Atomic Energy Commission, Veterans Administration, National Institutes of Health and the three military services are receiving big boosts in research grants this year—much of which will go to drug and chemical companies under new research contracts next year.

And there's a deluge of other important legislation still hanging fire. This includes: proposals for more aid to science education besides the $1,000/year undergraduate loans and graduate study fellowship grants approved last week; imported minerals barter program (part of farm crop disposal law); Rep. Blatnik's (D., Minn.) bill to crack down on drug and cosmetic advertising claims; return-of-alien-property bill; and hazardous-articles-labeling bill.



Richfield's C. A. Day heads new West Coast petrochemical unit.

Coast Petrochemical Debut

A new contender for Western petrochemical markets will officially bow in Sept. 1 when Richfield Oil Co. (Los Angeles) starts up its petrochemical department (CW, Business Newsletter, Aug. 2).

In setting up the new department, Richfield is following the path of most other major oil producers. Explains Vice-President David Day, "Our present operations and the apparent future of the petrochemical field are now of sufficient importance to Richfield to merit creation of a separate department."

The new department will be part of Day's manufacturing and transportation department. Heading it will be C. A. Day (no relation to Vice-President Day), who has been research and development manager at Richfield's Anaheim research center. Its functions: sales, market surveys, process investigations and profitability studies of petrochemicals and production methods.

Succeeding Day at Anaheim: L. M. Richards, assistant research manager.

Separate Venture: In a separate development, Richfield plans to produce chlorinated hydrocarbons through the now-inactive American Chemical Co., which it owns jointly with Stauffer Chemical Co. *(CW, Business Newsletter, Aug. 23).* The companies are "actively planning" a plant in southern California. It will be American Chemical's first plant since the joint venture was set up in '54.

Presumably, both companies will supply the raw materials; Stauffer would bring chlorine from its Henderson, Nev., plant and Richfield would supply ethylene from its Watson, Calif., (just north of Long Beach) refinery.

Specific products of the new plant are still unrevealed. One almost-certain candidate: trichloroethylene, which airframe makers use by the carload for vapor degreasing. Company officials say that the initial roster of products will be revealed about Oct. 1.

First Break: Richfield broke into petrochemical production last June, when it started up a $6.5-million benzene-toluene unit at Watson. Capacity for each product is about 18 million gal./year. Richfield believes it is first West Coast producer to sell benzene on the open market. Shell Chemical's Torrance, Calif., petrochemical plant will be one customer for the nitration-grade (99.8% purity) benzene. Richfield will likely use much of the toluene output for its own boron gasoline. And West Coast aviation gasoline refineries offer a ripe market.

The Watson plant, selling to relatively few industrial consumers, was a natural way for Richfield to break into petrochemicals. Benzene consumption in Los Angeles is outdistancing local supply, a situation the Watson plant will presumably correct.

British Fiber Push

British synthetic fiber makers are barreling ahead with expansion plans, despite signs of oversupply.

• The latest projects: Imperial Chemical Industries plans to back up its polyester fiber and film expansion program with a new 30-million lbs./-year terephthalic acid plant *(CW, Aug. 23, p. 23)* at the Wilton works. Scientific Design (New York) will design the plant. The fiber (trademarked "Terylene") expansion is slated to go onstream in '60, will boost ICI's capacity to 50 million lbs./year.

• And Britain's only nylon producer, British Nylon Spinners (jointly owned by ICI and Courtaulds), is about to put up a $28-million nylon plant near Portsmouth. Government approval is being awaited. BNS operates two other plants.

These plans belie indications of overcapacity. But the supply of Terylene and nylon has caught up with demand. Newly released figures show England's total man-made fiber output actually fell 15-16% during the first half of '58, compared with the same period last year.

Falling rayon production explains the slide. But producers of all man-made fibers will likely be pushing harder for new markets in the coming months.

Trade Bars Still Up

Despite U.S. agreement with other NATO nations to loosen curbs on trades with Iron Curtain countries, the Commerce Dept. plans to add some "war-potential" chemicals and other chemicals to its own boycott list, government officials told CW last week.

Under strong pressure from its Western Allies, the U.S. recently agreed to a general easing of trade controls at the Paris conference of the Coordinating Committee (NATO nations, minus Iceland, plus Japan).

But for U.S. companies, the trade picture will not be significantly affected, U.S. officials now say. Commerce will continue to embargo all exports to communist China, North Korea and North Vietnam. And shipments to Russia and East Europe, even from West European nations, won't surge dramatically, under the relaxed controls.

COMPANIES

Unexcelled Chemical Corp. President James O'Connor has won a temporary injunction from the New York Supreme Court holding up the certification of votes cast at the company's July 23 annual meeting. By unofficial count a board of directors proposed by a dissident stockholder group won by a majority of 200,000 shares out of 376,000 outstanding. But President O'Connor charged his opponents with fraud and deceit, and with failure to disclose all the facts in the proxy material mailed before the meeting. Next round is a trial, expected by early October. The insurgents charge O'Connor with mismanagement.

•

General Mills will borrow $10 million from the Prudential Insurance Co. next spring to help finance its capital investment program. The food and chemical producer borrowed the same amount from Prudential last May to help finance capital requirements for the fiscal year ending May 31. During that period, General Mills spent $15.9 million for plant and equipment, will spend somewhat more during the current fiscal year.

EXPANSION

Epoxides: Union Carbide has enlarged earlier plans for its Institute, W. Va., epoxide unit. Capacity is now set at more than 10 million lbs./year of epoxides and other oxygenated chemicals. Estimated completion date: mid-'59.

•

Gypsum: Two new gypsum plants are slated for construction.

• Bestwall Gypsum Co. will build a $7.5-million plant in Brunswick, Ga., the first step in the company's multimillion-dollar Atlantic Coast expansion program, the Brunswick plant is slated for completion late next year. Capacity: 300 million sq. ft. of gypsum board and lath products a year. It will consume up to 300,000 tons of gypsum annually.

• U.S. Gypsum will build a gypsum plant in Sperry, Iowa. Completion target: early '60. It will be the company's fourth plant in the Midwest. Capacity figures have not been released.

•

Methylamines: Pennsalt Chemicals Corp. is building a new plant at its Wyandotte, Mich., works to produce mono-, di- and trimethylamine. It goes onstream next month. A growing captive use, Pennsalt says, was a primary factor behind the expansion. Builder: Catalytic Construction Co. (Philadelphia).

•

Petrochemicals: Louisiana Chemical Corp. (Magnolia, Ark.) has awarded a $3-million contract for expansion of the Columbia Products extraction plant, which Louisiana Chemical will operate. The expansion will add ethane recovery facilities and increase capacity for recovery of natural gas by-products, including propane and butane.

•

Fertilizer: Valley Nitrogen Producers, Inc., a farmer cooperative, plans to build a fertilizer plant in or near Fresno, Calif. Products: anhydrous ammonia, ammonia solution, ammonium sulfate. The Berkeley Bank for Cooperatives has just approved the plan.

FOREIGN

Petrochemicals/Austria: The recently denaturalized Haig Werke A. G. plans to build Austria's first methanol plant, an 8,000-metric-tons/year unit that will satisfy the country's methanol requirements.

Austria's petrochemical industry was launched last June with the formation of Danubia Petrochemie A. G., jointly owned by the nationalized Stickstoffwerk A. G. (Austrian Nitrogen Works) and Italy's Montecatini. It's slated to start producing polypropylene in '59 or '60.

•

Perlon/Hungary: Hungary will start up a 330-metric-tons/year perlon plant next month in Nyergesujfalu. It will use East German machinery.

•

Fertilizer/Greece: After several years' negotiations and strong competitive pressure, the consortium of Uhde GmbH. (Germany) and Ammonia Casale (Italy) has won a contract from the Greek government to build a nitrogen fertilizer plant. Capacity: about 350,000 tons/year. Cost: about $35 million, $12 million of which will come from a U. S. credit.

•

Imports/China: Red China's imports from England rose 60% for the first half of this year, compared with the same period in '57, the publication *China Trade and Economic Newsletter* reports. Chemical imports from England totaled $3.4 million; total English imports were $19.6 million.

•

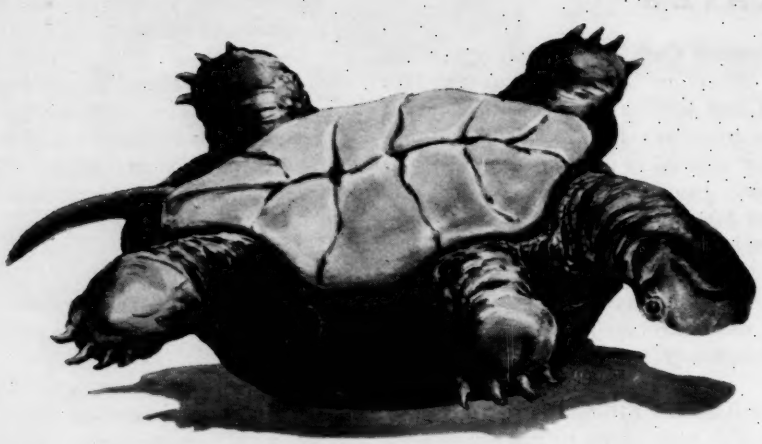
Oleochemicals/Netherlands: Emery Industries (Cincinnati) and Unilever (Amsterdam) are discussing a joint venture to produce oleochemical derivatives for European markets. The proposed plant would be built in Rotterdam. The two companies recently completed an eight-month market survey in Europe.

•

Carbon Bisulfide/Australia: A $1.5-million carbon bisulfide plant has been brought onstream at Newcastle by Hunter River Chemical Co., wholly owned subsidiary of Australian Cream Tartar Co. The plant is Australia's second; Stauffer Chemical Co. holds a 34% stock interest in the Australian company.

•

Detergents/Morocco: Procter & Gamble has formed a new Morocco subsidiary headquartered in Casablanca, Procter et Gamble—Maroc to produce and sell P&G products in the Mediterranean area.



Getting Nowhere...fast!

A chemical man responsible for finding a new plant site for his company, at the same time carrying on his everyday business routine, has his hands full. In fact, the weight of details surrounding a tough plant location problem alone may have a tendency to put him "on his back."

If you find yourself in this position, Norfolk and Western plant location specialists can help get you back on your feet. Their prompt, competent assistance, their specialized knowledge of chemical plant operating requirements and factual information on *The Land Of Plenty* will help you make a wise site selection.

Tell these men of your needs, and their dependable, confidential service — provided without obligation — will speed you toward actual ground-breaking. It will help you *get somewhere — faster!*

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Washington Newsletter

CHEMICAL WEEK
August 30, 1958

Under the new farm law, demand for fertilizers will increase, particularly in cotton areas. Purpose of the new legislation is to encourage farmers to take lower price supports in return for increased plantings. Officials don't know how much increase to expect, but it could be substantial.

This year, 11.9 million acres of cotton were in cultivation July 1. Next year, the national allotment will be 16.3 million acres. Farmers may individually choose to increase plantings an additional 40%; they then qualify for price supports at 65% of parity. Farmers staying within the allotment system can get 80% of parity. If half the producers choose the combination of larger plantings and lower supports, the total acreage would jump to 19.5 million, 7.6 million higher than this year. It's expected that most of the increase would be in the Mississippi Delta and in California cotton-producing areas.

•

Fourth-quarter business will be better than it was the same time a year ago. That's now the forecast of government analysts, prepared for use in the White House. It explains why the big worry in Washington now is inflation, instead of the recession.

If the new forecast is borne out, the recession will be the sharpest, but the shortest, of any of the three business dips since World War II.

Gross national product hit a recession low of $425.8 billion in the first quarter of this year. It rose to $429 billion in the second quarter and is expected to sweep up to $440 billion or higher in the fourth. In first-quarter '59, GNP could go to $445 billion, which would mean the economy is back to the boomtime high reached in third-quarter '57.

Anti-inflation measures to date are mild—deliberately so. The Federal Reserve has approved a rise in the discount rate in some of the district banks, but plans no real tightening of credit at the present time. The Administration is planning some budget retrenchments next year, but nothing drastic can be done to the big spending programs approved by the 85th Congress.

•

Military officials are grumbling loudly over new budget restrictions—notably on missile development. This shows up in new leaks to the press on the "lag" in U.S. military preparedness and in the stepped-up efforts of Democrats to make defense once more a political issue.

Output of test missiles is still far under the volume demanded by Air Force officials and planned production rates for IRBMs and ICBMs are also well below schedule.

Even though the post-Sputnik budget calls for a hike of some $2 billion in defense spending this year, Defense Secy. McElroy hasn't

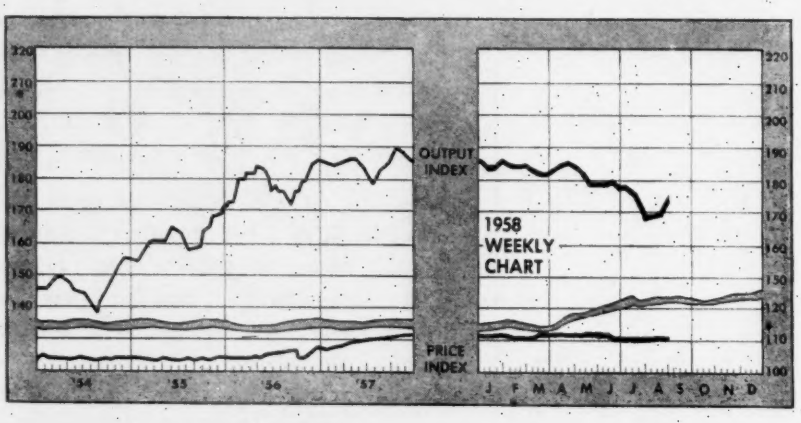
turned out to be as big a spender as top military men had hoped. Much of the spending increase, as they like to point out, will go for inflationary cost increases and pay hikes rather than increased research and development or hardware production.

•

Synthetic carotene's future is still up in the air. Food & Drug Administration last week closed a year-long hearing on its proposal to classify the colorant, made by Hoffmann-LaRoche, as a coal tar requiring certification under rigid safety rules for continued use.

The issue, important to synthetic carotene's commercial future, now rests with FDA hearing Chief Leonard Hardy. Hardy's report to FDA Commissioner George Larrick will form the basis of a final decision next year. FDA scientists challenge Hoffmann-LaRoche's contention that the synthetic lacks characteristics of other registered coal tars. They also contend that the company's product contains so-far-unidentifiable impurities—which might bar its approval under FDA's reading of the law.

Hoffmann-LaRoche wants exemption from coal-tar regulations, which require proof of absolute safety and batch certifications. If Hoffmann-LaRoche wins its point, synthetic carotene will be free from the rigid coal-tar coloring law, but will be subject to a new food additive law enacted this year. Under the new law, synthetic carotene use would be regulated by a tolerance limit set by FDA—unless FDA finds that the product is generally regarded as safe by experts, in which case it's exempt.



Business Indicators

WEEKLY	Latest Week	Preceding Week	Year Ago
Chemical Week output index (1947-49=100)	175.0	171.5	181.0
Chemical Week wholesale price index (1947=100)	110.7	110.6	110.8
Stock price index of 11 chemical companies (Standard & Poor's Corp.)	43.97	44.43	43.48

MONTHLY Wholesale Prices (Index 1947-1949=100)	Latest Month	Preceding Month	Year Ago
All commodities (other than farm and foods)	125.7	125.3	125.7
Chemicals and allied products	110.4	110.7	109.5
Industrial chemicals	123.1	123.5	123.5

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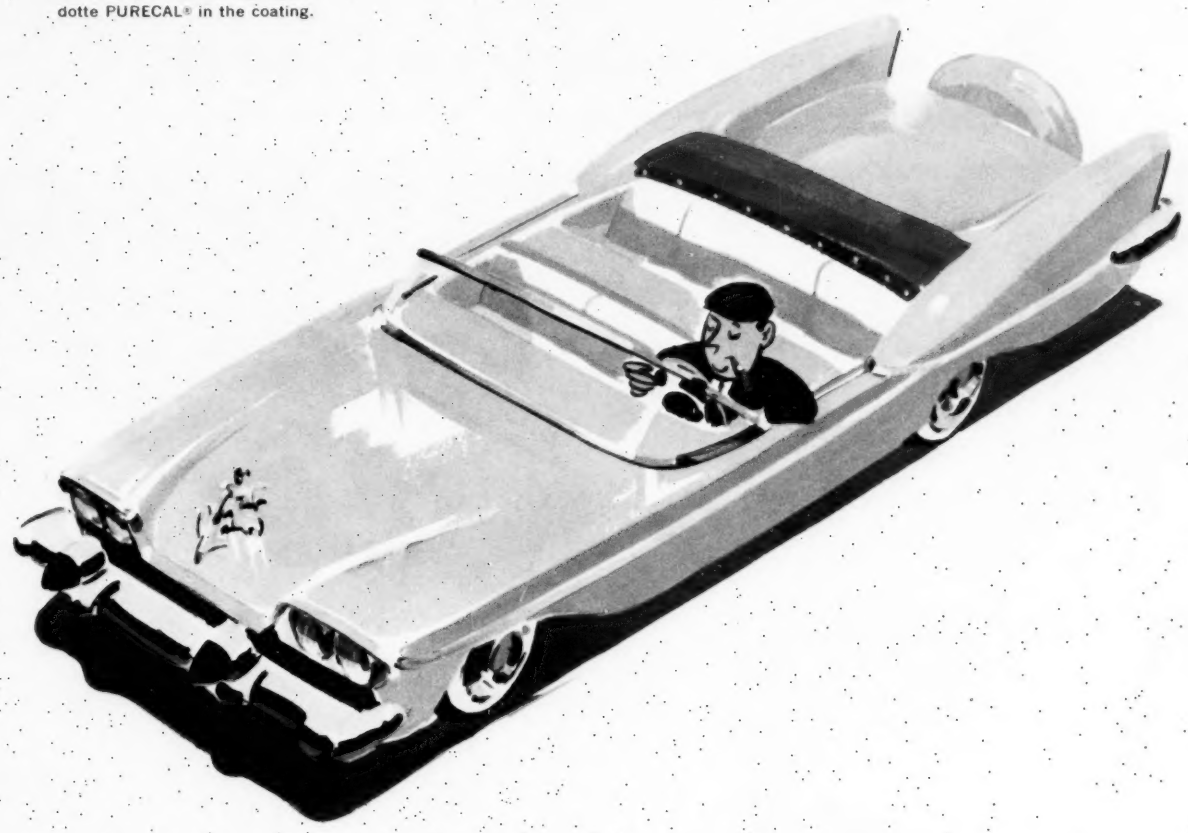

What is the real measure of success for technical service?

You certainly can't measure the value of technical service in terms of the number of "good will" tours made through a customer's plant.

Or the amount of money spent each year for technical service.

Nor by the number of "service" requests received. Or by how hard or long one tries to solve a technical or processing problem!

The only way to evaluate technical service is in terms of results!

Wyandotte customers like our technical service . . . they know that it is deep-rooted and sincere. Here are some results:

An ink manufacturer writes: "Wyandotte technical service showed us how to reslurry dry PURECAL* in our own plant and get the results we were after . . . this lowered our freight charges, prevented freezing, eliminated both the cost and handling of metal drums. They were a great help to us."

A water-conditioning manufacturer states: "A Wyandotte service representative pointed out the product benefits of PLURONIC* surfactants in boiler water-treating compounds and in cooling-water systems . . . saved us research time by prompt action and supplying the proper technical data on their products."

A textile-processing mill says: "Wyandotte technical service helped us effect a savings of 18% annually in caustic-soda costs—and removed certain handling hazards at the same time."

You can get the benefits of Wyandotte's technical service, too. Just send us as much information as possible on your product or processing problems, and the results you seek.

For a pictorial presentation of Wyandotte at work, turn the page.

*Reg. U.S. Pat. Off.

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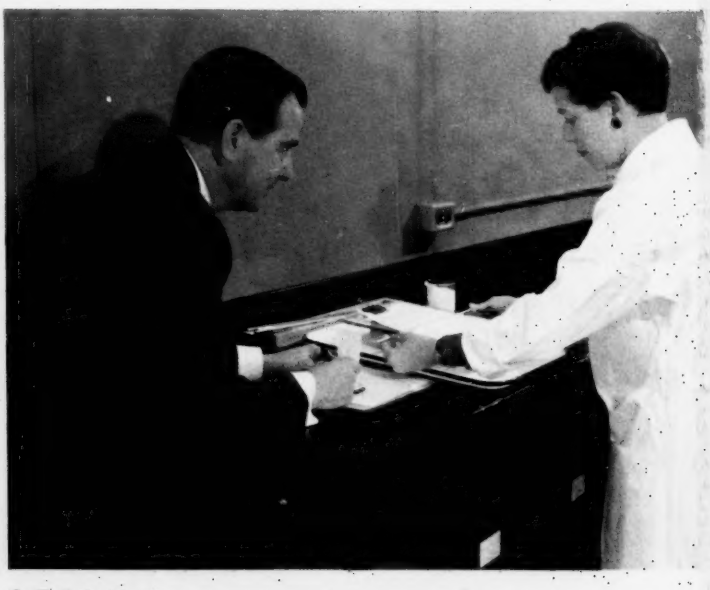
Smoothing out problems in papermaking

. . . an example of Wyandotte technical service at work

1 A paper company wanted to upgrade its coated stocks by giving them higher brightness, improved printability. The company's technical staff talks to Wyandotte technical-service man, who suggests formulation study using PURECAL.



2 Technical-service representative has technician in Wyandotte paper-application laboratory make a control of present coating for comparison with formulation changes.

3 Coatings using PURECAL in various combinations with clay are studied in smoothness-testing machine . . . followed by tests for brightness, gloss, adhesive demand, printability. (Care is taken not to change color make down.)

4 Laboratory report is presented to company's research director by technical-service man who discusses findings and expected finishing properties of new formulation.

5 Company's research director compares previous stock with new grade. The uniformity, high brightness, well-defined particle size of PURECAL result in better brightness and finish, improved printability, ease of make down. Next step: plant trial runs.

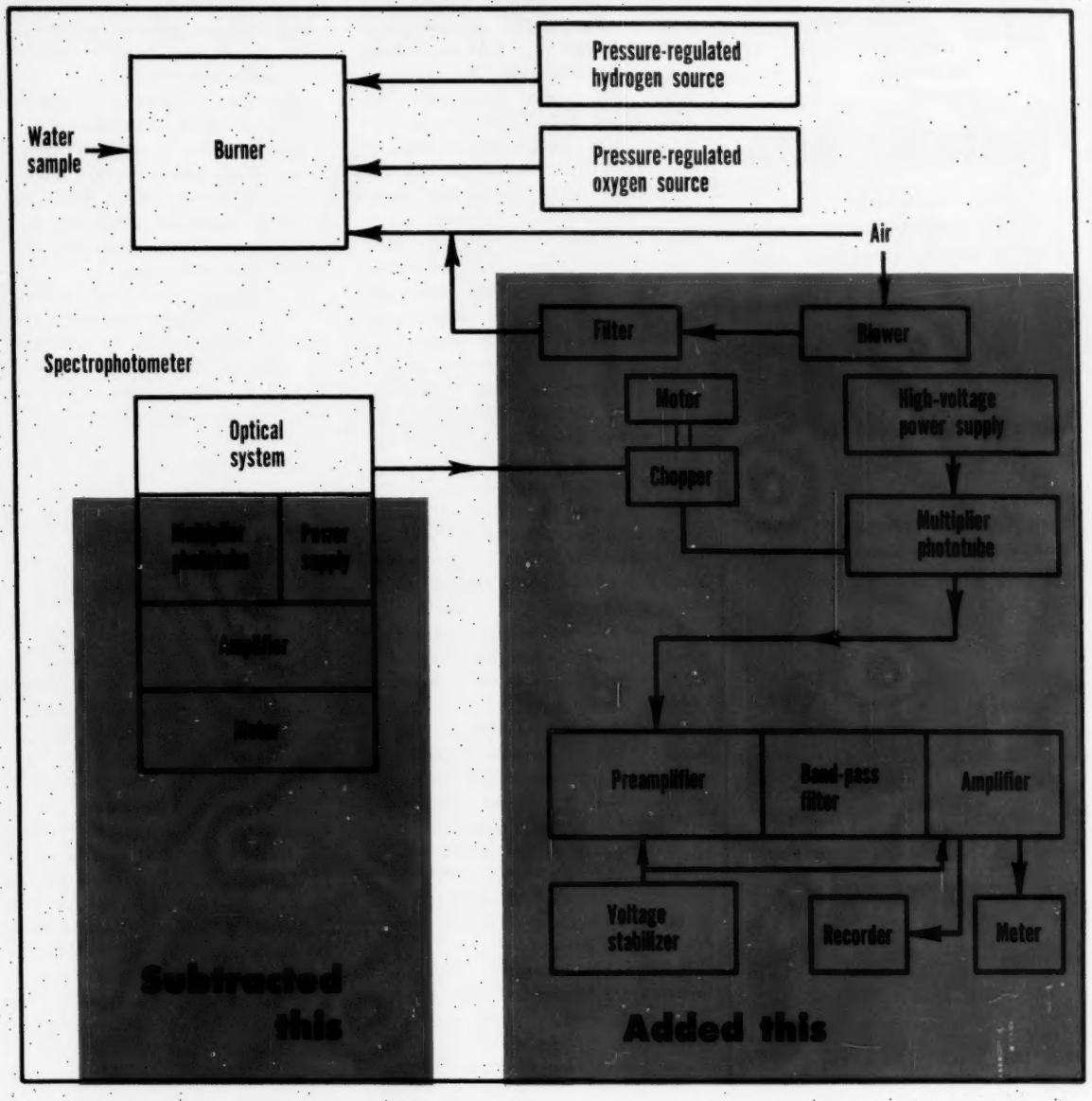
533

PURECAL®—Wyandotte's precipitated calcium carbonate—is solving problems for many industries . . . giving smoother finishes for paper, improving paints, giving better white-sidewall tire stocks. Point is: Wyandotte technical service, as demonstrated on this page, is available to all Wyandotte customers. If you have a problem that falls within our technological or manufacturing background, check with us . . . our approach is designed to provide answers. *Wyandotte Chemicals Corporation, Michigan Alkali Division, Wyandotte, Michigan. Offices in principal cities.*

Wyandotte CHEMICALS

Pacing progress with creative chemistry

In making sensitive photometer, Con Ed engineers . . .



New Design Charts Ten-Billionth Impurities

The chemical engineering bureau of Consolidated Edison Co. (New York) is this week canvassing process instrument makers, hopes to find a firm to make a commercial version of the device it invented to detect traces—down to one-tenth of one part per billion—of chloride ion in boiler feed water.

Con Ed worked out the basic instrument—so completely modifying commercial instruments that it produced virtually a new device—to use for continuous control of feed water for the utility's 275,000-kw. nuclear-fueled electric generating station abuilding at Indian Point, N.Y. Con Ed needed the extremely sensitive unit to make sure there would be no chloride ion buildup in the Indian Point equipment. Stress corrosion and cracking of austenitic stainless steel in the pressurized-water reactor might possibly take place if chloride ion concentration in the feed water got much over one part per billion.

The unit, in addition to feed-water monitoring, can be used to evaluate the performance of fine-cleanup ion-exchange units, a problem that con-

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Providence	GAspee 1-2070
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fronts various segments of the chemical industry. It will replace the conventional way to keep rein on chloride ion concentration — by conductivity. That method is unreliable when concentration is extremely low.

New Angle: Con Ed's engineering group, in attacking the problem, found that earlier researchers had tried both radioactive tracers and sodium flame photometry. Either system might have been tried, but the photometry setup was decided upon. Using this method, the team felt it could determine not only the chloride ion concentration for the Indian Point reactor but also the boiler and evaporator carryover in conventional ultrahigh-pressure power plants.

Conductivity measurements for carryover (mainly sodium salts from sodium hydroxide treatment of the feed water) are thrown off by the ammonia and carbon dioxide also present in the boiler and evaporator steam. The new instrument, determining sodium ion concentration, would give a direct indication of carryover. And, it would indirectly indicate chloride ion content.

Moreover, a flame photometer could use water samples drawn off from various points of the equipment system continuously.

Instrument Needs: But, a highly sensitive flame instrument capable of continuous operation with a minimum of attention by skilled personnel couldn't be found on the market. The spectrophotometers best suited to the problem, when fitted only with flame, photomultiplier and recording attachments commercially available, were not sensitive enough.

At first, to improve instrument sensitivity, a blower and filter system (Ultra-Aire Space Filters, made by Mine Safety Appliance Co.) were added to prevent air contamination of the flame, and the standard hydrogen and oxygen pressure regulators were replaced by more precise ones (Governaire Series 1,000, made by Fairchild Engine and Airplane Co.).

But sensitivity of the instruments was still not adequate. And even using commercially available stabilized power sources, the instrument drift over a period of time precluded use in a continuous operation.

Further instrument modifications were considered; but at this point, William Nacovsky and Willard Crandall, who were directing the experimental work at the bureau's labs, changed tactics of the research team.

Tailoring by Design: Instead of piling modification onto modification, the group took the basic flame attachment and the spectrophotometer optical system, and designed the rest of the instrument themselves.

Changes in phototube sensitivity due to variations in voltage were overcome by using a specially designed high-voltage power supply (made by Hamner Electronics Co.). And, a more sensitive multiplier phototube giving a better spectral-response curve (RCA Type IP28) was found.

Dark current* and noise—which reduce the instrument sensitivity—were rejected electronically by "chopping" the light beam at a fixed frequency of 90 cycles/second, and using capacitance coupling and a band-pass filter.

Variable damping smoothed out slight flame flickering, and an internal voltage source "bucked out" the flame background portion of the signal so that only voltages directly proportional to the sodium concentration in the material were fed to the recorder.

Field Poser: For calibration in the field, standard solutions containing sodium in the concentration in which the instrument was designed to operate had to be ruled out. The concentrations were so small, contamination from the atmosphere would throw the measurements off. But, since the photometer's dry flame (the flame without the sample) at the wave length of sodium emits light of the same magnitude as the low concentration of sodium the instrument was designed to record, the bureau's team decided to use the dry flame as a reference for calibration. By varying the instrument's slit width in increments, a series of emission values covering the range produced by standard sodium solutions was obtained. Using this method, the photometer can be calibrated in less than five minutes to an accuracy of better than 1% of full scale.

The device's total development time was one year. But by scheduling the project well in advance, the instrument is ready and waiting for use when the new Indian Point station goes into operation.

*When the illumination of the phototube is cut out completely, the phototube's output current (anode current) does not drop completely to zero. This remaining output is known as dark current.

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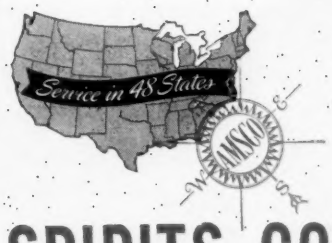

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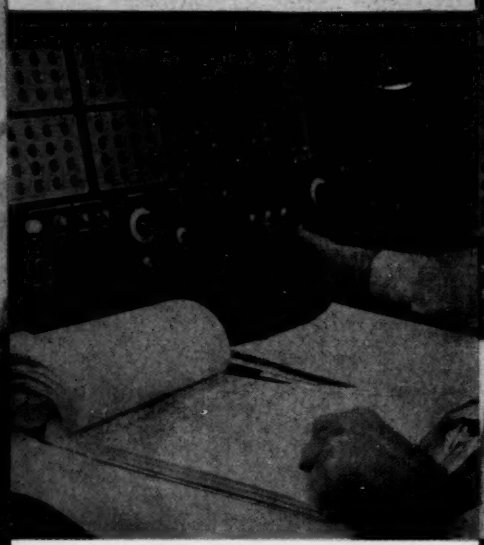

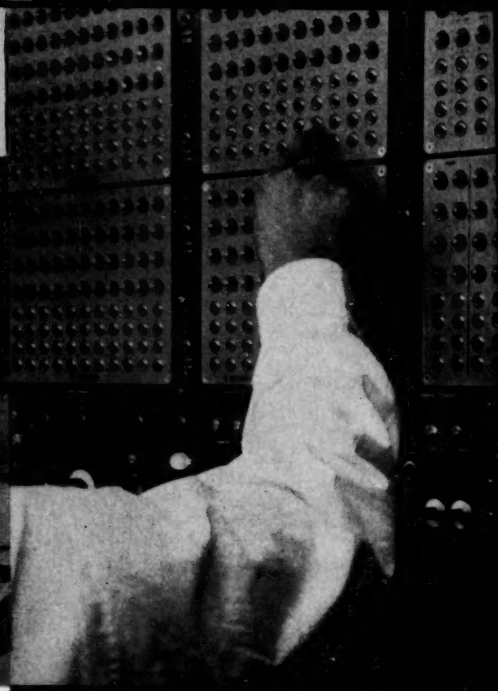

WHEN you consider expansion...
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the creative ability of men.

Salt-water conversion program moves into high gear as:

- ***President Eisenhower tells U.N. General Assembly: "Problem of water is on the threshold of solution."***
- ***Congress passes legislation authorizing $10-million construction program for five large demonstration plants.***
- ***Office of Saline Water starts construction at newly acquired solar distillation test site in Florida.***

Water Desalting: Closer to Commercial

Big money, big plants and even bigger hopes have been making headlines for the government's saline-water conversion program in recent weeks.

President Eisenhower dramatically ended six years of relative obscurity for saline-water researchers when he went before the United Nations General Assembly Aug. 13 to proclaim that man's age-old struggle to end the world's water shortages is on "the threshold of solution." Items in the government's latest effort to cross the threshold:

• Recent Congressional bills authorizing $10 million for five large pilot demonstration plants—three coastal sea-water units and two inland brackish water plants—some capable of producing at least 1 million gal./day of fresh water.

• Ground-breaking by Battelle Memorial Institute for the first of several prototype units, a glass solar still designed by George O. G. Löf, Denver engineer *(CW, Nov. 23, '57, p. 55)*. Location: near Port Orange, Fla., on Ponce de Leon Inlet, just south of Daytona Beach. Completion of the unit is expected in September.

• Conferences with two key contractors: Du Pont (designer of two plastic solar stills scheduled to be constructed at the Florida site) and W. L. Badger (whose multiple-effect distillation system is an almost sure bet for large-scale pilot testing within the next year).

Optimism with a Purpose: The President's statements had the ring of heady optimism to the ears of those familiar with the details of the program. But his remarks notified Congress of keen White House interest in seeing final action on pending legislation to launch a $10-million demonstration pilot-plant program. They were expected to prod Congress into completing action *(CW Washington Newsletter, Aug. 23)* on the program—one that the Administration had previously opposed on budgetary grounds.

Congress has already given the Office of Saline Water an appropriation of $1,175,000—which is $450,000 higher than last year's record. However, the appropriation is still $180,000 below the amount originally authorized.

New Solar Test Site: Purchase of the Florida test site was made possible by a recent appropriation of $345,000. It will be OSW's first station for testing solar distillation facilities. The now abuilding Löf still, for instance, will be the world's first deep-basin solar still, a 2,500-sq.ft. unit with an output of 250 gal./day.

This will be followed in a few months by the two Du Pont-designed shallow-basin plastic stills: a 2,500-sq.ft. unit with an output equal to the Löf unit, and a 500-sq.ft. unit producing 50 gal./day. Best bets for films to be tested: a special variety of Mylar and a special variety of experimental Type R transparent film (polyvinyl fluoride). Du Pont engineers hope that Type R will approach Teflon in weatherability (10-20 years), Mylar in ultimate cost. Du Pont's most hopeful prediction of cost, based on small-scale tests: $1.25/1,000 gal.

Promise in Freezing: The agency is also pushing ahead on freezing processes, which hold new promise of eventually competing with distillation methods. Carrier Corp. (Syracuse, N.Y.) is designing a freezing pilot plant to produce 15,000 gal./day of fresh water, now that successful laboratory studies on the method have been completed.

OSW is also supporting work at Cornell University, which received a contract this year for a direct freezing method in which isobutane refrigerant is injected into a tank of sea water. OSW hopes that the cost of desalting water by freezing may eventually drop below 50¢/1,000 gal.

Distillation Leads: Most advanced methods, however, are the various nonsolar distillation processes, such as W. L. Badger's multiple-effect still, Kenneth Hickman's rotary vapor compression still (both tested by OSW at Harbor Island, N. C.), flash-distillation systems of Griscom-Russell Co. (Massillon, O.), Maxim Silencer Co. (Hartford) and Cleaver Brooks Co. (Milwaukee). Two of the world's largest plants—Singmaster-Breyer's (New York) recently dedicated 2.7-million-gal./day publicly owned plant at Aruba (Netherlands Antilles) and the Westinghouse-built 3-million-gal./day plant in Kuwait—are of the multiple-effect type.

Distillation cost estimates vary with the size of the plant as well

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as with other factors. W. L. Badger says a 1-million-gal.-day plant would cost $1.3 million, produce fresh water for 60-80¢/1,000 gal.; he estimates a cost of 27-30¢ for a 17-million-gal./-day plant (including credit for by-product electricity). OSW claims that the availability of salable by-product electricity would lower water costs in large units from $2-3/1,000 gal. to "considerably below $2." The Hickman test still, says OSW, shows a "strong indication" of reducing conversion cost to less than $1/1,000 gal. Cleaver Brooks estimates $1.02 (for a 1-million-gal./day flash-distillation unit), to be lowered to 89¢ by patented improvements.

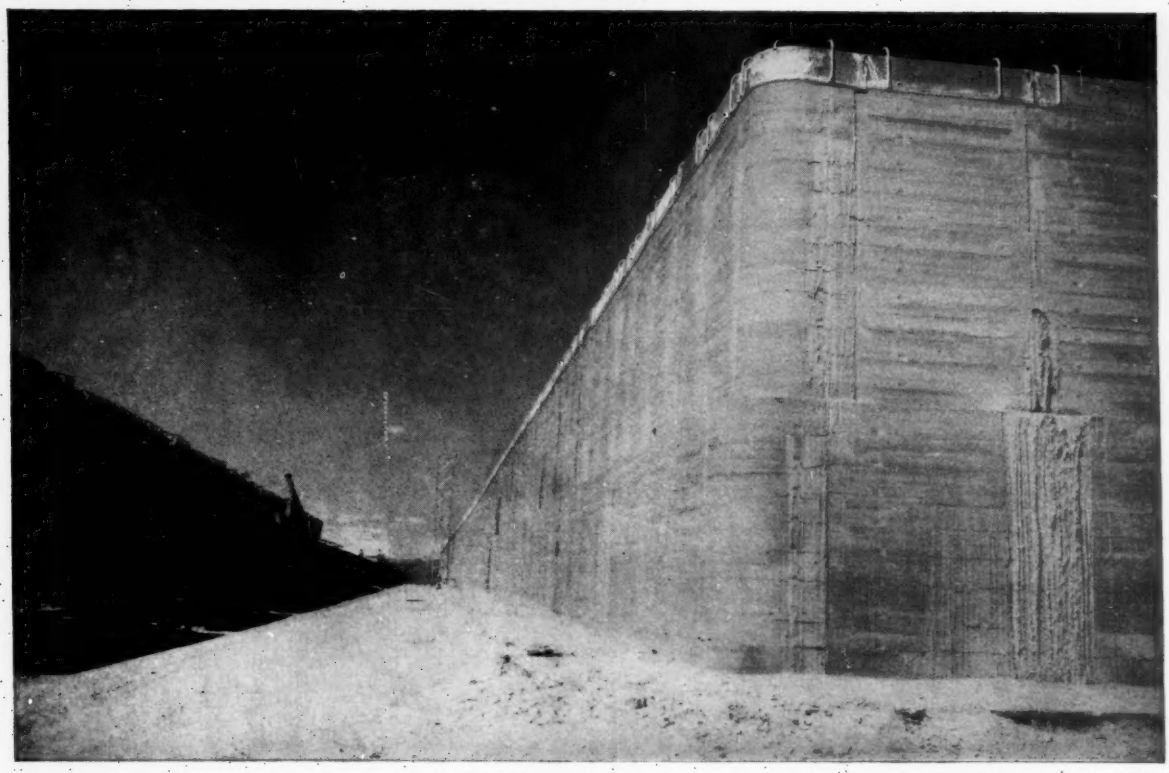
Also in the Running: Other processes still quite well up in the list of hopefuls include electrodialysis, solvent extraction and nuclear power. The first is the only one now commercial. Ionics, Inc. (Cambridge, Mass.), has sold units all over the world, will supply a 28,000-gal./day unit to the city of Coalinga, Calif. It will be the first municipal water desalting plant in the U.S. *(CW Technology Newsletter, June 7).*

Estimated costs for demineralizing 2,000-ppm. water (widely prevalent in the U.S. Midwest): $1.10/1,000 gal. for a 25,000-gal./day unit, 60¢ for a 1.5-million-gal./day plant.

Solvent extraction, being researched at Texas A&M College, would utilize glycol or glycerol ether compounds to extract fresh water from brine. Long-range cost estimates are about 50¢/1,000 gal. for sea water, 25¢ for brackish. However, recent reports indicating that the work is already closing in on these goals have been exaggerated, says Texas A&M, which still describes its work as "exploratory research."

Nuclear-powered sea-water conversion is obviously not about to compete commercially, but confidence in its future was evidenced last month by OSW and California Water Authority. They combined to award a $100,000 contract to The Fluor Corp. (Los Angeles) to do a comprehensive feasibility study on such a project *(CW Technology Newsletter, July 26).*

Though all reports indicate the problems of making cheap water are on the way to solution, it is still likely to be some time before they are completely solved.



Stockpiling

...a continuing company policy established years ago

Stockpiling is a measure of service.

The government is stockpiling strategic materials for its long range defense program. Thus, it serves the citizenry. The producer of a raw material who as a company policy stockpiles also serves . . . serves its customers who in turn serve others by being able to count on a supply of the raw material in quantity.

The policy of Texas Gulf Sulphur Company has always been to stockpile . . . always producing *extra* for the future. In spite of the growing demands for the important basic material it produces—Sulphur . . . the company's policy has been to keep on hand stocks equal to about a year's normal demand. With such a supply, it can make shipments, routine or emergency, of any tonnage, at any time, by any method.

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LOOK AT Na_2CO_3—SODA ASH

This versatile alkali serves as basic raw material or essential "refiner" in the manufacture of glass, chemicals, detergents, ferrous and non-ferrous metals, pigments, soap, textiles, paper and many other items.

LOOK AT H_2O_2—HYDROGEN PEROXIDE

One of Columbia-Southern's newer products, this compliant chemical has a range of reactions that permits its use for bleaching paper and textiles, as a rocket propellant, as a reagent in organic syntheses.

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Color—just the right color—often makes all the difference between clothing that *sells* and clothing that stays on the sales counter. These handsome ties are more colorful, and more profitable, because the dyes have penetrated easily and evenly.

That's where Atlantic Ultrawets come into the picture. With Ultrawets in the dye bath, the fibers drink up the dye with all its intense color and sales appeal. The Ultrawets are members of the fast-growing family of petrochemicals made by The Atlantic Refining Company—so you see the miniature refinery along with the ties.

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Atlantic sales engineers are always ready to help your staff get the most from your use of Atlantic petrochemicals. For full information, write Chemicals Division, The Atlantic Refining Company, 260 South Broad Street, Philadelphia 1, Pennsylvania.

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In Canada: Naugatuck Chemicals Division of Dominion Rubber Company, Ltd.

In Europe: Atlantic Chemicals SAB, Antwerp, Belgium

In South America: Atlantic Refining Company of Brazil, Rio de Janeiro.

PRESS PICTURE SERVICE

Knight, Mitchell: After two years of talking, a sudden decision.

Union Leaders Seek Merger

Chief figures in International Chemical Workers Union and Oil, Chemical & Atomic Workers Union this week find their organizations considerably closer to merger into a single union. And as a result of their decision to push a merger, chemical management faces the prospect of having to negotiate with one, 267,300-member union instead of two.

Chances of initiating the merger are strong. Last week, after two years of relative inactivity following consolidation of the parent AFL and CIO organizations, planning committees under leadership of ICWU President Walter Mitchell and OCAW President O. A. Knight got down to cases. In Cleveland, they "reached agreement on a detailed program that will provide a definite timetable of preparations for the merger of our two unions" (*CW Business Newsletter, Aug. 23, p. 17*).

An ICWU spokesman said the merger timetable would be submitted to that union's executive board at a meeting in Louisville Aug. 24. If the proposal receives approval—considered likely—of the union's administrative bodies, it will probably be placed before rank-and-file members at the October convention in Washington, D.C. Similar steps may be expected of OCAW; it convenes in September.

Long-Time Coming: The issue has been skirted by the two unions ever since the consolidation of AFL and CIO, although joint committee meetings of the two organizations have been held from time to time. The Cleveland meeting was proposed by Knight in a letter to Mitchell last June.

Unquestionably, a smooth merger would greatly strengthen the bargaining powers the unions now have separately. Especially important is the pool of money that a merger would make. In fiscal statements last year, ICWU reported total income of $1,182,800, major portion of which came from per-capita membership dues, while OCAW reported income of $3,018,900 from per-capita, initiation and reinstatement dues alone. Together, the two would have income of $4,202,000. With this cash all in one coffer, and with administrative and overhead expenses reduced by the amalgamation, it's reasonable to expect a stronger organizing effort.

Much to Be Done: But there's work ahead before merger can fully take place. As both leaders have said, while there is much in common between the two unions, there is also much that is different. ICWU, for example, is a decentralized union, with a big part of its administration being handled through nine regional vice-presidents. OCAW, on the other hand, is centralized; command is held more tightly at the Denver headquarters.

The question of dues also enters the picture. ICWU last October raised its dues 25¢/month, bringing the per-capita tax to $1.50. OCAW has just announced that it would propose a $1 increase in monthly dues at its convention, raising payments to $2.50/month. The two diverging policies may be difficult to align.

Biggest question of all, however, is that of leadership. Both union presidents are influential men, who have spent considerable time and effort attaining their present positions. In addition, each has able lieutenants. How leadership will be apportioned is, on the surface at least, a thorny problem.

ICWU's multiple vice-president setup has already proved a stumbling block in the merger discussions. When Knight invited ICWU to open preliminary talks, he suggested that OCAW's top officers participate, along with four from ICWU. It was simple enough for ICWU to select two—Mitchell and Secy.-Treas. Marshall Shafer. But there were difficulties, it is reported, in choosing two more from among the nine vice-presidents.

These are the problems that lead some observers to conclude that actual merger may take at least three years. Nevertheless, the mills appear to be grinding; when they're done, chemical management can expect new, and more concentrated, efforts at organizing, this time from a single source.

Planning ahead can save $20,000 on fluid mixing

An idea from your LIGHTNIN Mixer representative's briefcase

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He's working on a process that will employ mechanical mixers. But in a year or so, process requirements are expected to change, throwing 15% greater load on the mixers.

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Solution proposed by LIGHTNIN Mixer representative: install standard turbine-type LIGHTNIN Mixers geared for the immediate job, but sized to handle the expected load. When requirements increase, simply change impellers and two gears in each mixer—providing correct power input for the new conditions at minimum expense.

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This is one example of the many ways your LIGHTNIN representative can help you get efficient fluid mixing at lowest long-term cost.

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Take advantage of his unmatched experience by putting him on your process-design team. For prompt help on any fluid mixing operation, call him in now. He's listed in Chemical Engineering Catalog. Or write us direct.

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ADMINISTRATION

LABOR

High-Energy Settlement: Workers of two Oil, Chemical & Atomic Workers locals at Olin Mathieson's high-energy plants in Niagara Falls and Model City, N.Y., have accepted a contract covering group insurance and medical benefits. The locals—15-616 and 15-616A—have been on strike since June 28. Wages were not at issue; the contract includes liberalization of medical benefits. Two other OCAW locals had already settled with OM *(CW, July 12, p. 50).*

•

One-Day Strike: Employees at A. E. Staley Mfg. Co. approved a new wage contract proposal that ended a 29-hour strike, the first in the firm's 52-year history. Some 1,900 members of Local 837 of Allied Industrial Workers Union voted to accept contract terms recommended by a federal conciliator calling for a 7¢/hour wage increase retroactive to July 1, when the previous contract expired. Other provisions call for an increase in shift premiums, four weeks' pay for three weeks' vacation for 25-year employees, liberalization of vacation, hospital and medical plans, and a wage-reopening clause, calling for renegotiation after one year.

KEY CHANGES

Frederick A. Gilbert to vice-president, Food Machinery and Chemical Corp. (San Jose, Calif.).

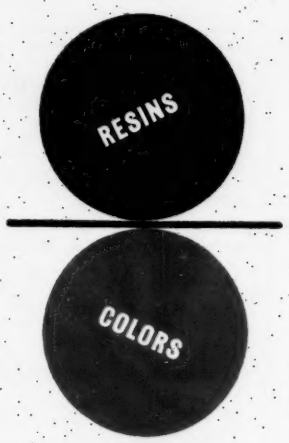
Carl McFarlin, Sr. to board chairman, and **Rolland O. Baum** to president, Tennessee Products & Chemical Corp. (Nashville).

J. M. Tinnon to vice-president, sales and new-product development, and **R. A. Wilson** to vice-president, production and engineering, Air Reduction Chemical Co. (New York).

Vertrees Young to director, Crown Zellerbach Corp. (Portland, Ore.).

Fred N. Roberts to coordinator, market research and assistant to senior vice-president, National Starch Products, Inc. (New York).

P. J. O'Brien to vice-president, production and engineering, and **R. F. Steel** to vice-president, finance and administration, United States Borax & Chemical Corp. (Los Angeles).



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For plastics and synthetic rubber of consistent quality, start with thiophene-free SUNOCO BENZENE

Sunoco benzene surpasses ASTM purity specifications for nitration-grade benzene. Its minimum freezing-point specification (5.2C), in fact, is nearly a half degree higher than ASTM nitration-grade specifications. This higher purity means higher yield and better quality control.

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Other Sun petrochemicals: Anhydrous ammonia, toluene, xylene, Sulfonate 0S, Sunaptic® (naphthenic) acids, propylene trimer, propylene tetramer, PDO-40 (petroleum drying oil), sulfur.

For further information and a list of Sun offices, consult Chemical Materials Catalog.

Role of Mergers in

Company	
General Aniline & Film	
Air Reduction Co.	
Liquid Carbonic	
National Cylinder Gas (Chemetron)	
Du Pont	
Union Carbide	
68 firms in 21 other industries	

*Original combinations—e.g., Carbide in '17—not counted.
Source: Whitney's "Antitrust Policies."

Good Word for

Antitrust laws have actually made a "moderate contribution" to the development of the merger-minded chemical industry, says economist Simon Whitney in a two-volume study of American industry, published last week.†

Whitney, now chief economist and director of the Federal Trade Commission's Bureau of Economics and formerly research department chief for Twentieth Century Fund (publisher of the report), explains these gains like this: the industry benefited by the breaking up of the "powder trust," the stimulation of diversification, and by the outlawing of the tight patent and market agreements that bound U.S. and European companies.

Whitney also pointed out that while benefiting from the antitrust laws the chemical industry has been a notable example of progressive industry:

"The record of the [chemical] industry in increased production, new products and long-run price reduction has been outstanding. The risks taken and success achieved have resulted in consistently high profits. The industry has earned the right not

†"Antitrust Policies: American Experience in Twenty Industries," 1101 pages, 107 tables and index ($10).

Chemical Industry Growth

Assets Added By:

Acquisition*		Internal Growth	
$ million	Percent	$ million	Percent
$27.8	62.3%	$16.8	37.7%
40.0	46.6	45.8	53.4
18.8	44.0	23.9	56.0
9.7	42.4	13.2	57.6
401.8	35.5	730.3	64.5**
162.8	31.9	347.9	68.1
4,524.4	19.1	19,162.1	80.1

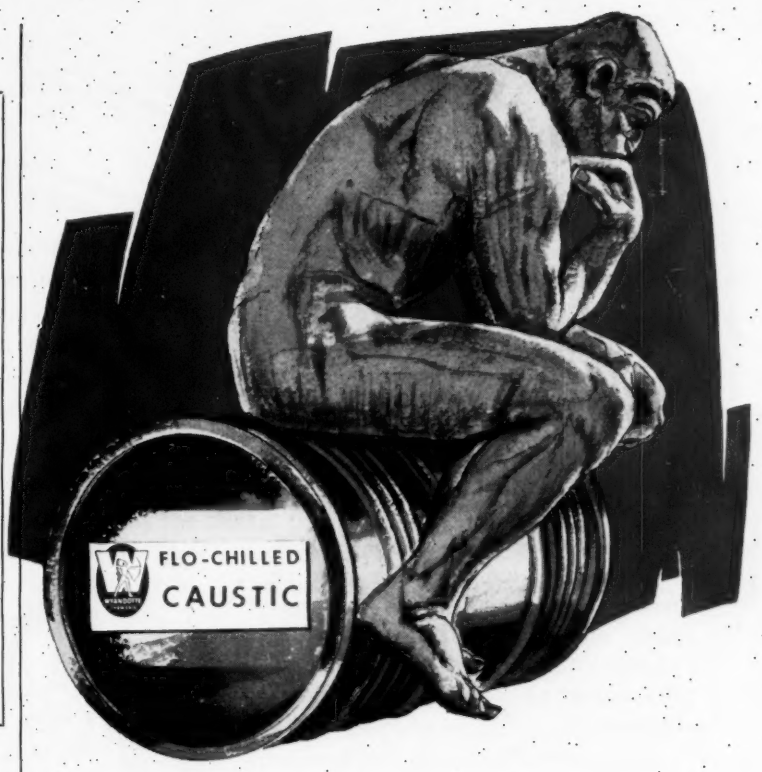
*Du Pont's President Crawford Greenewalt attributes 54% of the company's expansion to internal growth.

Antitrust Laws

to be the first target of proposals to reform the patent system or dissolve large corporations."

Examining a major source of antitrust complaints against the chemical industry—that it has made too many mergers and acquisitions—Whitney agrees that the industry has grown more by mergers and less by reinvestment of funds than U.S. corporations in general *(see table)*. But the mergers, he reports, have been for diversification more frequently than to unite producers of directly competitive products. Since '35, Whitney adds, the trend of concentration in the industry appears to be upward.

Taking the Case: Whitney's study, conducted and written during his association with the Twentieth Century Fund, probes in depth antitrust action in eight major U.S. industries and 12 significant cases in other fields. In his summary of the chemical industry, Whitney points out that many chemical company executives object to some of the antitrust proceedings. But, he goes on, they believe a competitive industry as required by antitrust laws is healthier than one tied by the agreements once thought necessary to secure the benefits of European technology.



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It'll pay you, too! For, Wyandotte *Flo-chilled** Anhydrous Caustic Soda flows free and easy in *any* kind of weather. No lumping or caking as ordinary caustic would in the hot, humid summer. It's *Flo-chilled* to provide you with easy use in your automatic machinery *every* day of the year. And *Flo-chilled* Caustic costs no more than ordinary grades. Order a supply from your Wyandotte representative or distributor, today!

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AA Quality Phosphoric Acid helps clean the nation's steel

Widely used by the nation's metal-working industries for pickling and coating of steel (*both* in *one* operation) and for polishing aluminum, AA QUALITY Phosphoric Acid assures the highest standards of quality and uniformity.

AA QUALITY Phosphoric Acid is made from 99.9 per cent pure Elemental Phosphorus . . . a product of our own electro-thermal process and our own ample reserves of phosphate rock. Strict quality control is maintained at every stage of manufacture.

If you would like information on how Phosphoric Acid or any other AA QUALITY Chemical can be used in your operation, please write our research department on your letterhead. Samples and data sheets will gladly be furnished.

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Bone Ash
Bone Oil
Keystone Ammonium Carbonate
Sulphuric Acid

Technology
Newsletter

CHEMICAL WEEK
August 30, 1958

Imperial Chemical Industries will use the Amoco oxidation process to make terephthalic acid in its new plant at Wilton Works near Middlesbrough. And that comes straight from Amoco, which late last week confirmed the speculation (*CW, Aug. 23, p. 23*) that it had granted a license to ICI. The ICI plant will be rated at 30 million lbs./year. It will be the fourth to use the Amoco process. The other three: Amoco's own plant—now nearing completion at Joliet, Ill.—and two in Japan.

•

A new packing material for use in biological waste treatment systems is hitting the market this week. It's Dowpac, a multilayer system composed of corrugated sheets of polystyrene or saran. Developed by Dow, the packing has been field-tested on domestic sewage and other effluent from metallurgical coke, kraft paper, ragmill, chemical and petroleum plants.

As Dow sees it, the material offers advantages because of its light weight and unique shape. Corrugations provide relatively large surface areas for the bacteria to adhere to, also allow for large-volume air flow to supply the bacteria with oxygen. Light weight—compared with rock filter beds—gives the designer latitude in laying out the system, keeps ground or floor area to a minimum.

•

An underground atomic explosion for extraction of oil sands may be tested in the near future in northern Alberta, Canada. The use of heat generated by nuclear explosive devices for the recovery of oil from oil shale, tar sands and depleted wells is one of the peaceful applications being investigated by AEC's Project Plowshare (*CW Technology Newsletter, July 12, p. 70*).

Although definite plans are being kept strictly hush-hush, interviews in Alberta by *CW* support the growing conjecture that the underground blast is being seriously considered. H. H. Somerville, deputy minister of mines and minerals, stated that to his knowledge "there has been nothing undertaken thus far." However, he also expressed the opinion that this technique is one of the *in situ* methods being pursued.

•

First results of a three-year study of underground combustion for secondary recovery of oil were reported this week by General Petroleum Corp. (Los Angeles). The $1-million experiment was conducted in a section of Kern County, California, where the oil sands are typical of many deposits that have low primary recovery.

The process: warm air is forced into the deposit through an injection well at about 100 F, causes slow oxidation of the oil that gradually raises the reservoir to ignition temperature. Spontaneous ignition creates a combustion front that moves outward from the injection well,

pushing layers of coke, hot water, light hydrocarbons and an oil bank toward the production wells.

The technique permitted recovery of about 50% of the oil initially in place in the test area within 1½ years after ignition. Normal methods, GP estimates, would have required 40-60 years to recover 10-15% of the oil. The method is still experimental; operating costs, to date, are several times the value of the oil produced.

•

Dust repelling polystyrene is a new entry of Monsanto Chemical Co. Standard polystyrene comes out of a mold carrying an electrical charge. As a nonconductor, it cannot dissipate the charge, which attracts dust particles. Result: dust becomes embedded in the surface. Monsanto's new material has a conductive surface. Cost: 1¢/lb. premium.

•

Lower nicotine content of tobacco plants grown with the aid of gibberellin has been noted by S. H. Wittwer of Michigan State University. In an interview at a Gordon Research Conference he told *CW* that coffee interests are also looking at gibberellin. Aim: to induce uniform blooming of the coffee crop.

•

Britain has a new heavy-water process that can reportedly produce deuterium oxide at a lower price than AEC's dual-temperature exchange method (*CW, Oct. 5, '57, p. 31*). The British process utilizes the well-known principle of deuterium exchange between hydrogen and ammonia (AEC's method involves exchange between hydrogen sulfide and water), which has a good separation factor but which was not previously used for lack of an efficient catalyst. Despite the economic advantages claimed for the new process, cost of a minimum-size heavy-water plant would be in the neighborhood of $6 million.

AEC sells heavy water at $28/lb., has previously pegged production cost as $15/lb. Latest developments in AEC's production methods and full details of the new British process will be disclosed at next week's Atoms for Peace Conference in Geneva.

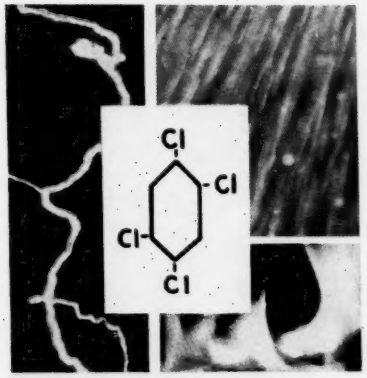
Cheap heavy-water could have a significant effect on Britain's nuclear power program, which is presently based almost entirely on systems using graphite as a moderator. The new heavy-water process was developed by Constructors John Brown Ltd., wholly owned subsidiary of John Brown Ltd., one of Britain's largest ship builders. The Hawker Siddeley-John Brown Nuclear Power Co. Ltd. has been investigating heavy-water-moderated systems for ship propulsion units.

•

Successful operation of a plutonium-fueled nuclear reactor at Arco, Ida.—the first to operate at "substantial power"—was described by AEC last week as a major scientific breakthrough. The plutonium fuel core, which started up Aug. 9, has already achieved a power level of 5,000 thermal kw., is expected to reach 30,000 kw. by the end of the month.

BRIEFS

on a new way to look at tetrachlorobenzene... some facts about phosphoric anhydride... a better grade of lauryl chloride... the care and packaging of caustic potash



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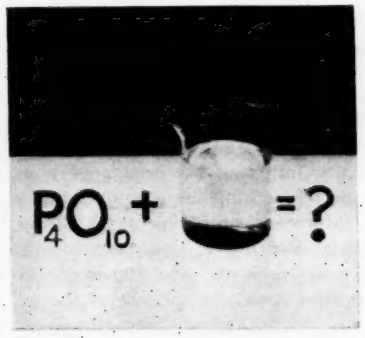
When you're looking for the stability, the resistance to fire and moisture, or the electrical properties of chlorinated aromatics, take a long look at our 1,2,4,5-tetrachlorobenzene.

Here you have a compound that's 65.7% chlorine, with a molecular weight of 215.9; a compound you can dissolve in most anything but water.

It's easy to handle. A white crystalline solid with very little odor.

It has many more interesting properties, all of them given in the technical data sheet offered in the coupon.



Is phosphoric anhydride more than a thirsty powder?

Stick to the textbooks and you'll write off our phosphoric anhydride P_2O_5 (P_4O_{10}) as just a rather strong desiccant.

Keep an open mind, though, and like many you may find it useful as a highly pure carrier of phosphorus, useful as an intermediate.

A typical analysis shows the Hooker product to be 99.5% pure P_4O_{10}. No trioxide. No chlorine. Barely a trace of iron, lead, and fluorine. 11 ppm arsenic —hardly enough to write home about.

We use a lot of this compound to make our own phosphorus chemicals. We also get calls for it for use in pharmaceuticals, dyes, insecticides, and even as a catalyst. In the light of all this, would you like to send the coupon for a technical data sheet?

Looking for lauryl chloride that's a little bit better?

Would you like to work with a lauryl chloride that's clear and colorless and has a *minimum* of 16% chlorine?

Those are the specs on our special *high grade*. It's an oily liquid with the faintest of odors.

Analysis shows it to be a mixture of n-alkyl chlorides ranging from C_{10} through C_{14}. The C_{12} fraction predominates and accounts for about 80% of the compound.

For many purposes, of course, you'll find our *technical grade* every bit good enough. Its specs read about the same, except that the chlorine content drops to 15.5% and the product has a slight color—up to 2.5 ASTM, to be exact.

For data on both grades, send the coupon.

Caustic potash—custom package at standard price

Expose it to air and anhydrous caustic potash soaks up moisture and carbon dioxide until it becomes weak and slow-acting.

To help you avoid this and to protect the inherent purity of our Nialk® caustic potash, we make our own containers to our own carefully controlled specifications.

You can get this pure and well-protected compound in any of seven forms at 90% strength, or in flake and solid at 85%. If you prefer the liquid, we have that, too, in strengths from 45% to 52%.

Check the coupon for full details.

For more information, check here and mail with your name, title, company, and address.

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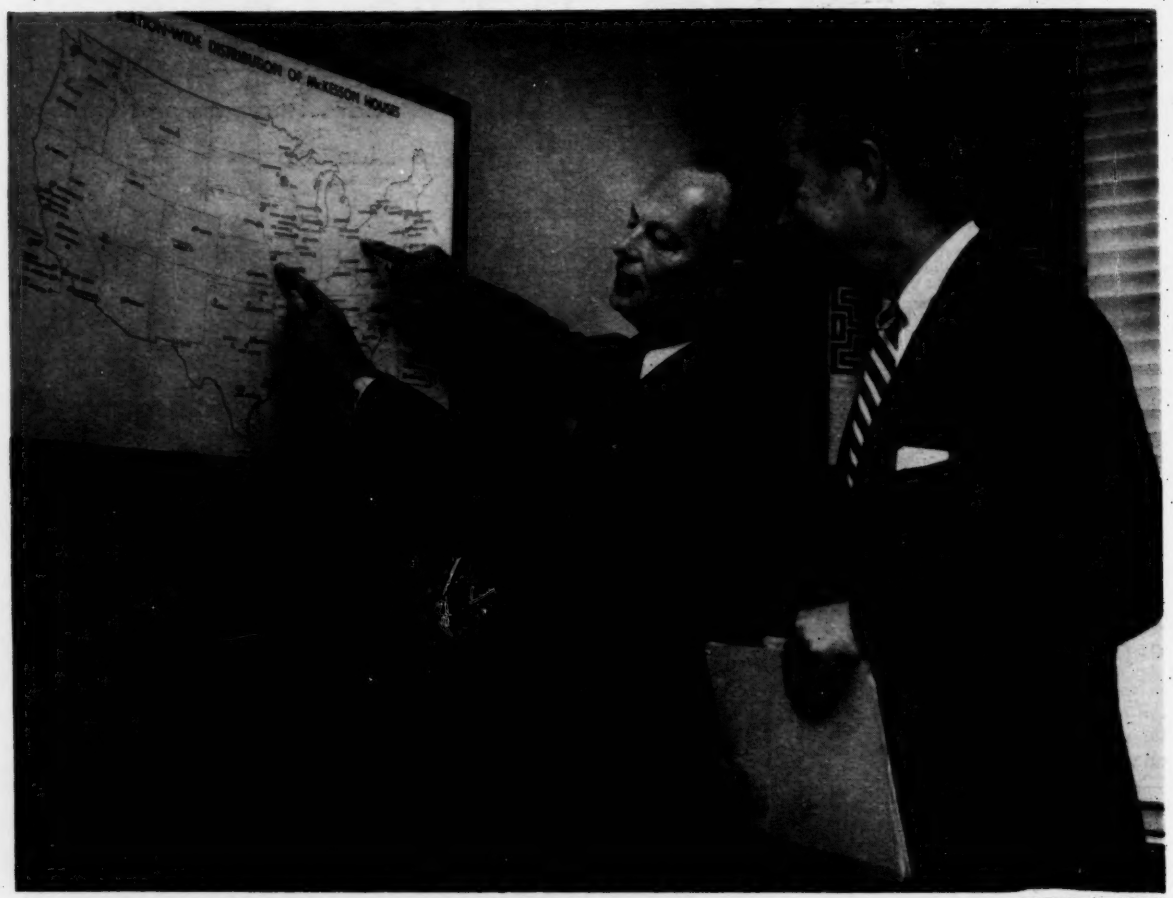

CW PHOTO—SYD KARSON

McKesson Vice-President Dean Hildebrandt outlines expansion plans to Merchants' President Watkins.

Charting a Bigger Role for 'LCL' Sales

Foreseeing an expanded role for the chemical distributor, McKesson & Robbins is moving ahead quickly this week with plans to acquire control of the Merchants Chemical Co., a large national wholesaler with 10 branches. Pending the results of an audit of Merchants' books and inventory, McKesson will take over Merchants by a straight exchange of stock during the last week of September.

The move will clearly establish McKesson & Robbins' chemical department as the largest U.S. chemical distributor. In recent years, both Central Solvents and Van Waters & Rogers have challenged McKesson Chemical's top position. Although the precise sales figures of McKesson Chemical and Merchants have not been revealed, reliable trade sources estimate that their combined volume will exceed $40 million annually. And that's a business that any producer would like to have. Large as the volume is, however, it's only a small part (less than 4%) of the total $1.1 billion sales of chemical merchant wholesalers and a minute part of all CPI sales (*CW, July 26, p. 91*).

More important perhaps than the size is this aspect: the acquisition will place McKesson Chemical in a much stronger position to win and service more less-than-carload-lot (LCL) business, a market it believes is slated for considerable expansion. Here's why:

McKesson Chemical's chief, Vice-President F. Dean Hildebrandt, and Merchants' President James Watkins both see the costs of distribution—particularly LCL distribution—rapidly rising for the basic producer. The result: a trend by producers to shift LCL distribution to the chemical wholesaler. In evidence for several years, the trend has been greatly accelerated during the past six months.

Moreover, adds Hildebrandt, the national economy is expanding and the country now has over 100 major industrial areas. As a result of the acquisition, McKesson Chemical will add three new areas to its scope of operations, will now service 58 areas.

To meet this surge of LCL business being transferred to the chemical wholesaler, and also to open outlets in new industrial areas, McKesson needs additional skilled manpower

and more opportunities to realize distribution efficiencies. And that's where Merchants fits the picture. The Merchants deal will give McKesson:

- About 55 additional experienced salesmen. This will swell McKesson Chemical's sales staff to 160 men, give it an opportunity to put "duplicate" salesmen out seeking new business.
- Enough increased volume in some lines to make it worthwhile carrying them and also to make more repackaging possible. Before the acquisition, McKesson repackaged at three locations only. Addition of Merchants will up the number to seven.
- Greater operating efficiency by permitting inventory reductions of duplicate stocks, greater utilization of truck fleets and more opportunities to save freight and to purchase at low carload and mixed-carload prices.
- Additional facilities—extra manpower, trucks and warehouse equipment—for expanding service.
- More products to distribute in all locations. Right now, McKesson carries about 450 products. After eliminating duplication, the new product line will total about 600. Moreover, there'll be some gain from a "complementary coverage." The McKesson branch in New York, for example, has emphasized high volume sales, coverage of the drug, chemical and plastics molding industry. Merchants, on the other hand, has stressed LCL selling and sales to cosmetics, protective coating, ink, specialties makers.

Integration: Thoroughly convinced that the meshing of Merchants and McKesson promises a profitable future, neither Hildebrandt nor Watkins expect any last-minute hitches that would block the acquisition. After the stock is transferred, integration will begin in earnest. Head offices, branch offices, warehouses and staffs will be combined. The identity of Merchants will be retained.

Once integration is completed, McKesson will be able to focus attention on plans for facilities in all principal U. S. industrial centers. Some 1,900 industrial chemical and explosives distributors will provide the combination with plenty of rough competition. But the acquisition, believes Hildebrandt, gives a hefty size and organization that outweigh the problems McKesson will face.

Booklets Build New Identity

This week, Armour Chemical Division is deep in the mechanics of incorporating a new trademark on all technical and promotional literature, shipping containers and vehicles.

For the literature, the switch is a final, though gradual, touch to a sweeping revision of the entire technical literature that's aimed at two distinct goals: establishing identity for Armour as a sizable chemical producer; putting more informative selling onto the printed page.

Armour Chemical's identity problem differs from that faced by many chemical manufacturers. Armour's burden: buyers tend to think of it in terms of its parent, Armour & Co., primarily a meat packer. Explains Armour Chemical's advertising manager, E. A. Michals, "We had to dispel the notion that Armour's chemical activity consisted merely of some reaction kettles behind stockyards. Our literature must provide the reader with a plant or lab tour in print." On the other hand, the identity problem that most chemical producers have is that they are unknown to much of the general public. Producers agree that the reputation that identity builds is a valuable sales asset.

In its revamped literature, Armour Chemical is building identity as a major chemical producer in several ways:

- Extensive use of illustrations showing plant equipment, chemical laboratory facilities and chemical product applications. These emphasize the technical base underpinning Armour Chemical's operations.
- Frequent reference to Armour Chemical as a distinct entity, educating the industrial public to think of the Chemical Division as an independent organization.
- Frequent juxtaposition of the trademark with the technical content of the booklets. The new trademark is comprised of two letter "A's" as a diamond within a circle.

Silent Salesmen: Because Armour Chemical Division looks comparatively small and young alongside the giants of the industry, it is essential, says Michals, that "our printed matter provide needed depth and strength to a relatively limited sales force. The literature gets into places where salesmen often can't call. In redesigning our literature, we set out to put a 'sales personality' into our bulletins and brochures. We like every one of our pieces of literature to bring in a sample request."

For Armour Chemical, this thinking has meant an approximate 10% increase each year in the dollar outlay for literature. This year, literature alone will take a $50,000-$100,000 slice out of the promotion budget.

The "sales personality" that the division prefers is a technical one. The booklets try to provide the sort of technical information customers can use. Field sales reports, conferences with specialists and reports from personnel in the laboratory and in product and market development all provide tips on what to emphasize. Special attention is given to developing functional illustrations.

"This," adds Michals, "is a key consideration. You can't convince and persuade your reader with a bunch of pretty, decorative, pointless pictures sprinkled about the margins just for atmosphere. Armour Chemical advertising staffers work with salesmen and researchers to secure photos of significant lab-testing procedures, experiments and applications.

Wide distribution of the finished booklets rounds out Armour Chemical's literature program. Usually, the production volume runs between 5,000-15,000 copies of a given edition of a brochure.

The new-look literature, for the most part, finds its way to the market place via direct inquiries. They are largely the result of advertising, mail promotions, publicity and a statement on each brochure that informs readers of other literature available.

Best indication of how effective the new booklets are comes from Armour Chemical's comparatively small field sales staff—20 salesmen, three regional managers and two sales agents. They rely on the booklets to provide the product and application knowledge they need. "We figure," adds Michals, "our customers are getting the same kind of education, in addition to the right kind of impression of us."

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TERGITOL Nonionics	Cloud Point, °C.	Properties
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NP-27	20	Aromatic-soluble emulsifier and wetting agent.
NPX	60-65	General purpose detergents, wetting agents, and emulsifiers.
TP-9	51-56	
NP-35	90-95	Detergent and wetting agent at elevated temperatures or in presence of dissolved salts.
NP-40	100	Detergent and wetting agent above 100° C.
TMN	35-37	Outstanding nonionic wetting agent with good leveling rewetting properties.
XD	60-65	Outstanding emulsifiers and low-foaming detergents.
XH	90-100	

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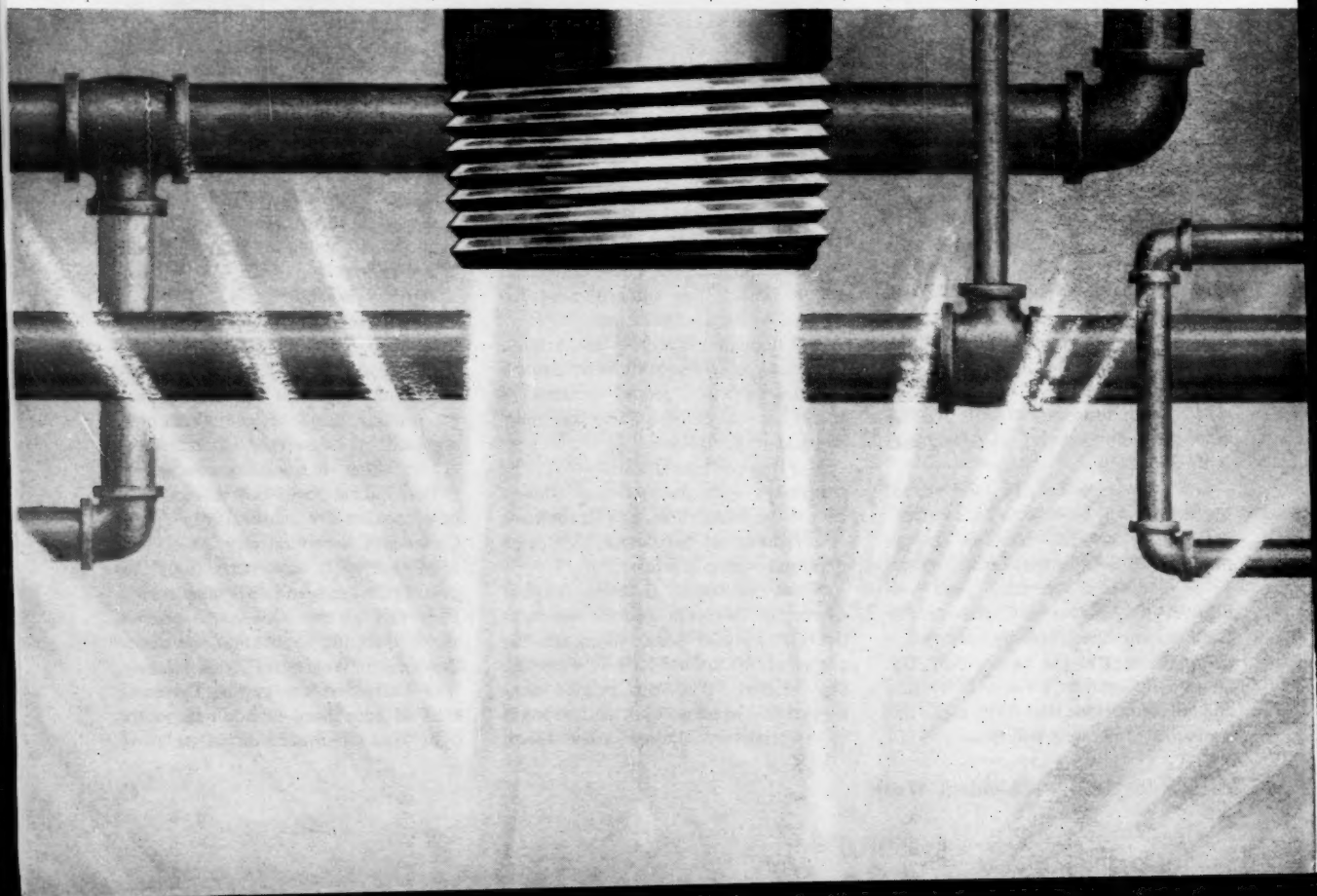
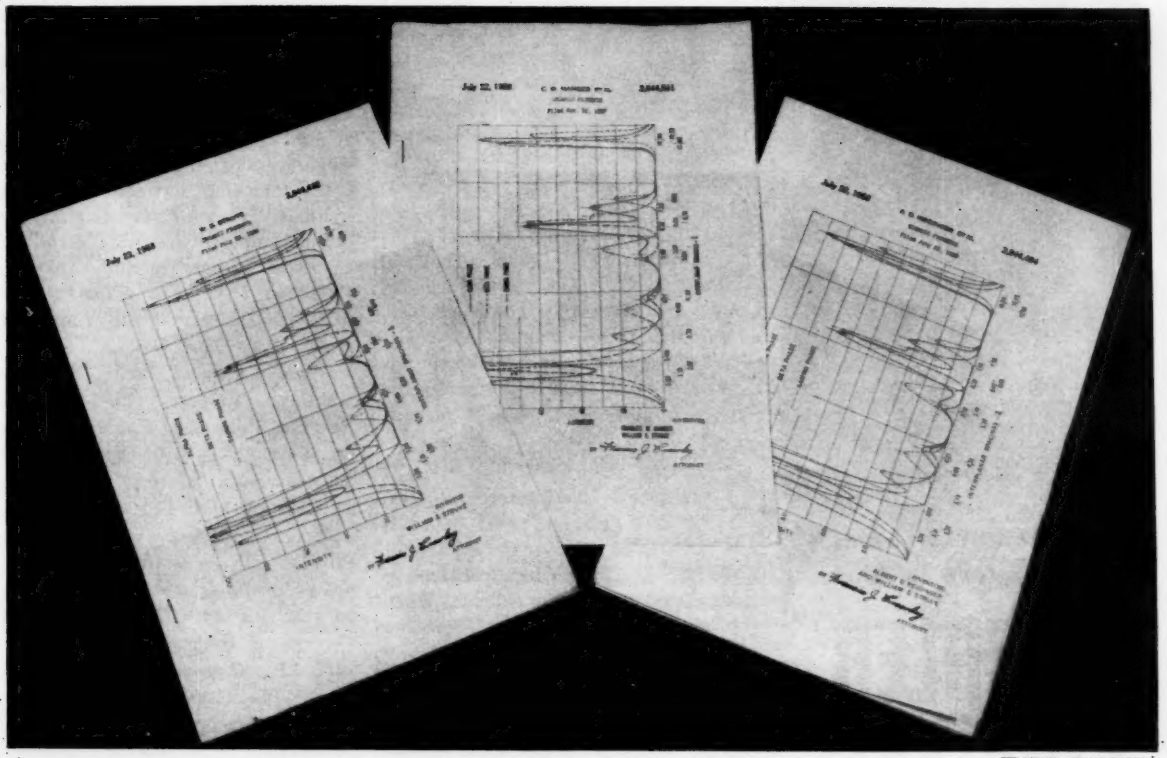




CW PHOTO—HANS BASKEN

Recently issued U.S. patents show crystal-forming secrets of Du Pont's red quinacridone pigments.

Key Patents Unlock Red Pigment Market

The three new Du Pont patents (above) give a look at the chemistry of the company's new and extremely lightfast Monastral red pigments. The pigments have undergone close industrial scrutiny since being released last spring (CW, May 31, p. 42). Today, they promise to soon capture a sizable portion of the "reds" market.

The Monastrals (a series of pigments —two red and one violet) are different crystal forms of linear quinacridone, a long-known but rather rare compound. Du Pont has scored, not only by devising a commercially valuable way of synthesizing the quinacridone but also by working out simple mechanicochemical ways of producing the crystals. Resultant products aren't cheap, at $13/lb., but are well below the price of some special vat dyestuffs.

Terephthalate Chemistry: Linear quinacridone has five six-member rings in a line, the second and the fourth rings of which are nitrogen-containing and have an oxygen atom attached to the remaining, unshared carbon atom. Although patents haven't issued on its quinacridone synthesis, Du Pont suggests (in its patents on producing the crystal forms) starting with terephthalic acid derivative, 2,5-dianilino-3,6-dihydro-terephthalate. This is converted into the dihydroquinacridone and thereafter into the straight quinacridone.

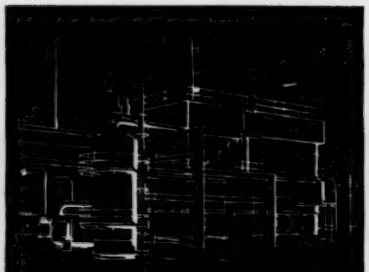
Then comes Du Pont's ingenious system of making the crystals, which it tags alpha, beta and gamma forms. The alpha crystal, "easiest of the three to prepare," according to patent 2,844,484, is a "bluish red pigment of excellent strength" that can be prepared by simply "milling quinacridone in any crystal phase with a relatively large amount of (common table) salt until a sample of the pigment separated from the salt has a surface area of greater than 60 sq. meters/gm. The salt is then extracted with a dilute aqueous acid, leaving alpha crystals." The beta crystal, "an intense violet," according to patent 2,844,485, is similiarly prepared, but in the presence of xylene. And the gamma crystal, covered by the third patent, 2,844,581, is a true red, calls for dimethyl formamide rather than xylene in the second step.

The result has been to produce an ultralightfast (even in pastel shades), abrasion-, heat- and chemical-resistant series of pigments that won't bleed through lighter colors.

Competitors' View: Several other pigment producers that have had a look at the Monastrals tell *CW* that Du Pont's new pigments indeed pose a threat to existing products.

One comment: "Du Pont has a jump on the market; (the company is) even offering the Monastrals at a lower price than high-grade vat dyes, which run up to $30/lb."

Joseph Switzer, vice-president of Switzer Bros. (Cleveland), a leading producer of fluorescent coloring



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agents, feels that Du Pont's effort is significant, says he is "working on new ultralightfast fluorescent pigments," but will not reveal his progress.

A Goodrich Chemical Co. (Harmon Color Works) representative, who also claims his firm is working toward new ultralightfast reds (and yellows), feels that the Monastrals are "very attractive as pigments," but he wants to "wait and see."

Similiar responses echo from Interchemical Corp.; Allied Chemical Corp.; Holland Color and Chemical Co., a division of Chemetron Corp., and American Cyanamid.

Plainly, Du Pont's achievement has stepped up the pace of research in the $15-20-million red pigment market.

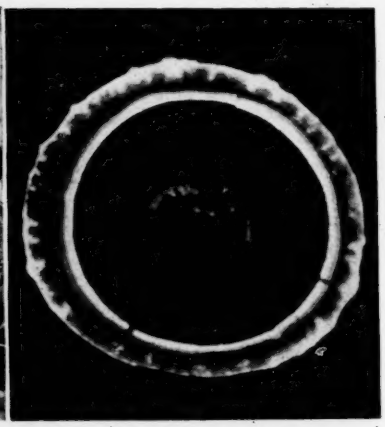
Graphite Under Fire

Resistant to temperatures of 5000 F, a new graphite-based material is the latest answer of National Carbon Co. (New York) to space-age high-temperature requirements. When placed in a jet of oxygen-kerosene flame, the new compound reportedly has 10 times the wear resistance of conventional graphite, which erodes in eight seconds under similar conditions. National Carbon plans further improvements of its new product before it is offered for military and civilian applications.

LITERATURE

The newly established Foreign Technical Information Center (*CW, Aug 9, p. 92*), part of the Office of Technical Services, U.S. Dept. of Commerce (Washington 25, D.C.), is now in operation. It offers—in single-issue or on a subscription basis—the following abstracts of foreign journals: *News of the Academy of Sciences of the U.S.S.R., Dept. of Chemical Sciences* (monthly, $6/year, PB-141055T*); *News of the Institute of Higher Learning of the Ministry of Higher Education, U.S.S.R., Chemistry and Chemical Technology* (bimonthly, $3/year, PB-141056T); *Raw and Vulcanized Rubber* (monthly, $6/year, PB-141057T); *Chemical Science and Industry* (bimonthly, $3/year, PB-141058T); *Chemical Industry* (eight issues/year, $4/year, PB-141059T); *Chemistry and Technology of Fuels and Oils* (monthly, $6/year, PB-141060T); *Refrigeration Engineering* (quarterly, $2/year, PB-141061T); *Oxygen* (bimonthly, $3/year, PB-141062T); *Coke and Chemistry* (monthly, $6/year, PB-141063T); *Colloid Journal* (bimonthly, $3/year, PB-141064T); *Crystallography* (bimonthly, $3/year, PB-

*OTS code number to be used in ordering.



In-Plant Study for More Cellulose

Cellulose-maker Rayonier, Inc., (Whippany, N. J.) is inaugurating some "tree-level" cellulose research. Seeking to find out more about tree growth mechanism—cellulose production—Rayonier researchers have injected radioactive carbon-14 into young pine trees. Their tests have shown that the carbon collects at the cambium layer of the tree (the first ring from the outside in the photo). The inner rings show diffusion of radiation or limited growth activity in the older sections of the tree.

141065T); *Scientific Reports of Higher Schools, Chemistry and Chemical Technology* (quarterly, $2/-year, PB-141066T); *Alcohol Industry* (monthly, $6/year, PB-141067T); *Glass and Ceramics* (monthly, $6/-year, PB-141068T); *Ukrainian Chemistry Journal* (bimonthly, $3/year, PB-141069T); *Progress of Chemistry* (monthly, $6/year, PB-141070T); *Journal of Analytical Chemistry* (bimonthly, $3/year, PB-141071T); *Journal of Physical Chemistry* (monthly, $6/year, PB-141072T); *Journal of Scientific and Applied Photography and Cinematography* (bimonthly, $3/-year, PB-141073T); *Journal of Inorganic Chemistry* (monthly, $6/-year, PB-141074T).

REPORTS

These reports are available from the Office of Technical Services, U.S. Dept. of Commerce, Washington 25, D.C.:

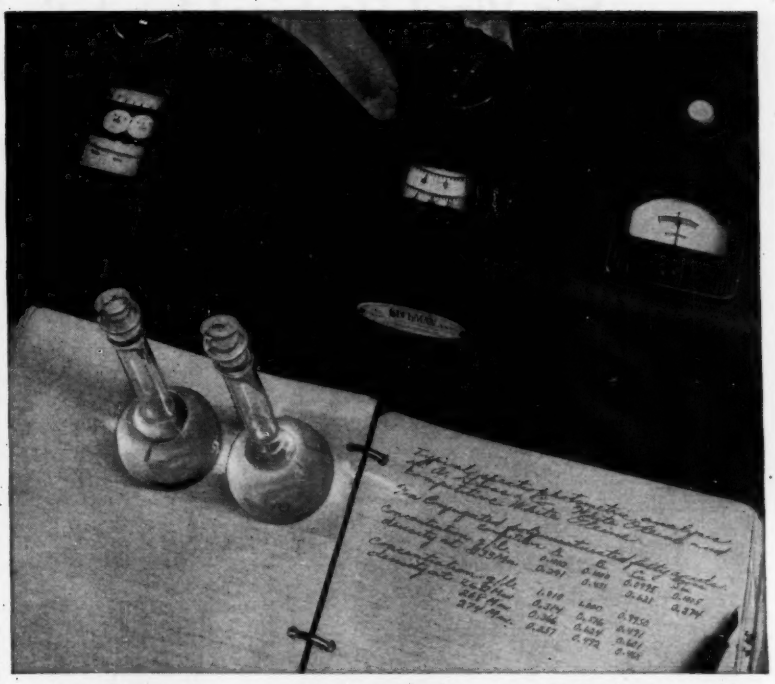
• Nine Atomic Energy Commission reports concerning chemical research: "Spectrochemical Determination of Uranium-235" (HW-55666,* 50¢); "Measurement of Impurity Effects in the Mass Spectrometer Isotopic Analysis of Uranium Hexafluoride" (K-1365, 50¢); "Determination of Iron in Uranium by the Carrier-Distillation Method, Using Cobalt as an Internal Standard" (LA-2171, $1); "Thorium—A Literature Search" (NLCO-727, 75¢); "A Literature Survey on the Physical Chemistry, Analysis, and Recovery and/or Disposal of Hydrofluoric Acid" (NLCO-729, 75¢); "A Study of X-ray Fluorescence for the Analysis of Rare Earths and Other Complex Groups" (ORNL-1917, $1); "The Preparation of Biarsine" (UCRL-5148, 50¢); "Nuclear Studies in the Rare-Earth Region" (UCRL-8192, $2.50); "The Crystal Structure of Vanadyl Bisacetylacetonate" UCRL-8225, 75¢).

EXPANSION

• The Dept. of the Army has established the Army Research Office at Arlington, Va., as a central office for the Army's rapidly growing research program.

• Standard Oil of Indiana has consolidated its research and patent activities into a new research and development department.

*OTS code number to be used in ordering.



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Market Newsletter

CHEMICAL WEEK
August 30, 1958

Hercules Powder's second sizable polypropylene price cut within eight months underscores the firm's determination to broaden the applications and markets of the new plastic (*see also p. 17*).

Following a 9¢/lb. reduction last spring (*CW Market Newsletter, May 3*), the current 7¢/lb. additional slash brings truckload tabs for the firm's polypropylene molding powder (tradenamed Pro-fax) down to 49¢/lb. Colored material will sell for 58¢/lb. in truckloads. Similar reductions are in effect for smaller quantities.

Plastic pipe producers will likely view the latest price cuts with mixed feelings. They all agree that the reductions, plus the fact that polypropylene has been approved by National Sanitation Foundation for use with potable waters, will smooth the way for polypropylene's advent into the pipe market. Pipe fabricators have long complained that polypropylene prices are too high. To some, therefore, the new price reductions will be good news.

But some pipe fabricators may view the price cuts askance. Reason: polypropylene, they say, is being pushed into pipemaking too fast—before the resin's chemical and physical properties are adequately studied. Lower prices now, they fear, could put polypropylene into pipe applications prematurely (*CW, Aug. 9, p. 77*).

In any case, polypropylene producers will seek to expand all potential markets as fast as possible. Next year, Humble Oil & Refining will become the nation's second polypropylene producer; within two years, predict industry observers, the roster will include five producers. With an estimated total capacity of 150-200 million lbs./year expected by that time, intensive market development of polypropylene seems assured.

•

Sales stimulation is also the aim of the new Epon resin price cut. Shell Chemical cut tabs up to 20%, retroactive to Aug. 15. New prices: Epon 828, delivered in tank cars, is cut by 15¢/lb., to 62¢/lb. Carload price of 1004—a solid resin—is reduced 6¢/lb., to 53½¢/lb.

•

Silicone rubber prices have been cut 10-12% by Dow Corning. Tabs are down to $22/lb. in lots of 1,000 lbs. or more. The latest price reduction on silicone rubber—which as recently as 1956 cost $30/lb.—is made possible, says the company, by "substantial increase in demand and production."

•

U.S. consumption of fertilizer nutrients has doubled—to 6 million tons—in the decade since World War II, according to Tennessee Valley Authority's E. L. Baum and S. L. Clement. They told those at a joint meeting of American Farm Economic Assn. and Canadian Agricultural

Economic Society at Winnipeg that as spectacular as this over-all growth is regional expansions in use of fertilizers are even more impressive. Plant nutrient consumption in 1946-57 increased 394% in West North Central states, 165% in East North Central states, 156% in West South Central states, and 35% in South Atlantic states (where fertilizer has been used for more than a century).

Estimated total U.S. increase in consumption of individual plant nutrients in the past decade: nitrogen, 185%; phosphate, 60%; potash, 130%; total primary plant nutrients, 95%.

•

The U.S. is one step closer to a helium conservation program. Proposed new legislation, described last week by Secretary of the Interior Fred A. Seaton, would permit the government to enter into long-term contracts with private industry.

The proposed program—aimed at conserving some 3 billion cu. ft./year of helium—calls for construction of 12 new plants to be situated on helium-containing gas pipelines. Helium extracted from the gas, before the gas is moved on to fuel markets, would be stored underground at the government-owned Cliffside gas field near Amarillo, Tex.

The government has already okayed the spending of $224 million to help interest private industry in building needed capacity. Seaton has made it clear that the Administration will back a federal construction program if industry balks at taking the job (*CW Market Newsletter, May 10*).

•

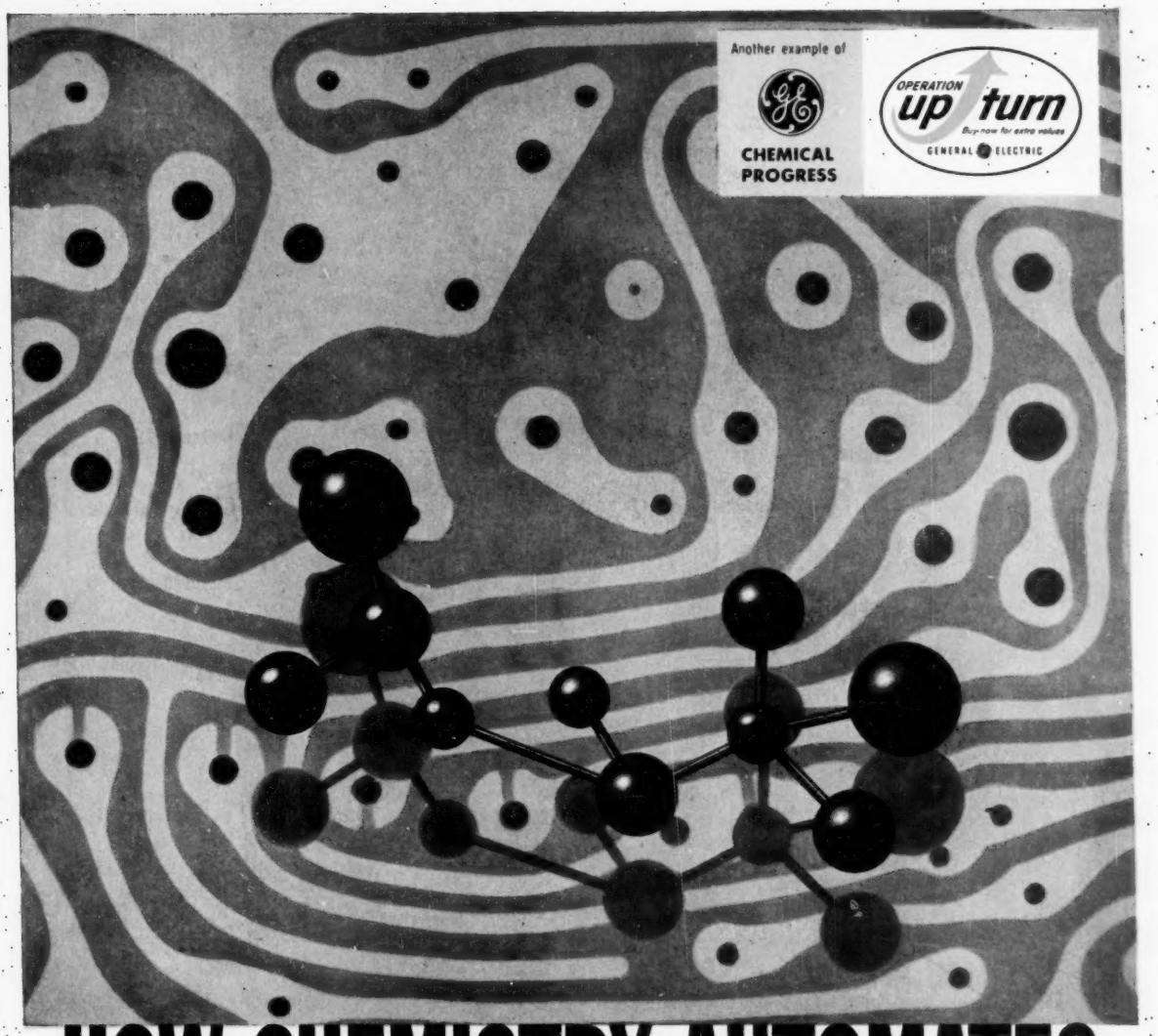
Record supplies of edible fats, oils and oilseeds are predicted for the 1958-59 marketing year beginning Oct. 1. According to Aug. 1 indications, says the U.S. Dept. of Agriculture, supplies of these materials will exceed the current year's 11.7 billion lbs. (oil equivalent) by 10%.

Mixed animal feeds, notes USDA, may become a major outlets for fats, which have been losing out in soap markets because of competition from synthetic detergents. Some 324 million lbs. of fats and oils were used in prepared animal feeds in '56; this market was practically nonexistent before '52.

SELECTED PRICE CHANGES — WEEK ENDING AUGUST 25, 1958

	Change	New Price
UP		
Oleostearine, dms.	$0.0025	$0.1450
Tin metal (Straits)	0.0075	0.95
DOWN		
Beeswax, crude, Afr., bgs.	$0.01	$0.56
Carnauba wax, Ceara, North Country, crude, bags, ton lots	0.01	0.70
Cottonseed oil, crude, tanks, South, East	0.005	0.11375

All prices per pound unless quantity stated.



HOW CHEMISTRY AUTOMATES PRINTED CIRCUIT ASSEMBLIES

New G-E plastic laminates that withstand 500°F molten solder bath are helping radio and electronic makers put printed circuit assembly lines on a completely automated basis.

These copper-clad laminates are a development of General Electric chemical research. They have exceptionally good heat stability, high insulation resistance and can be precision punched at room temperature. Because the laminates won't blister at high temperatures, several manufacturers have been able to set up completely automated lines in which the printed circuits – with component leads inserted – are assembled by quick dipping in molten solder. One leading maker of car radios was able to reduce assembly time from 45 minutes to less than three minutes by switching to a heat-resistant G-E copper-clad laminate.

Through chemical research, General Electric has developed many new materials that can help you improve your product or process. For information on G-E copper-clad laminates, write Dept. LPD, CHEMICAL and METALLURGICAL DIVISION, General Electric Company, Coshocton, Ohio.

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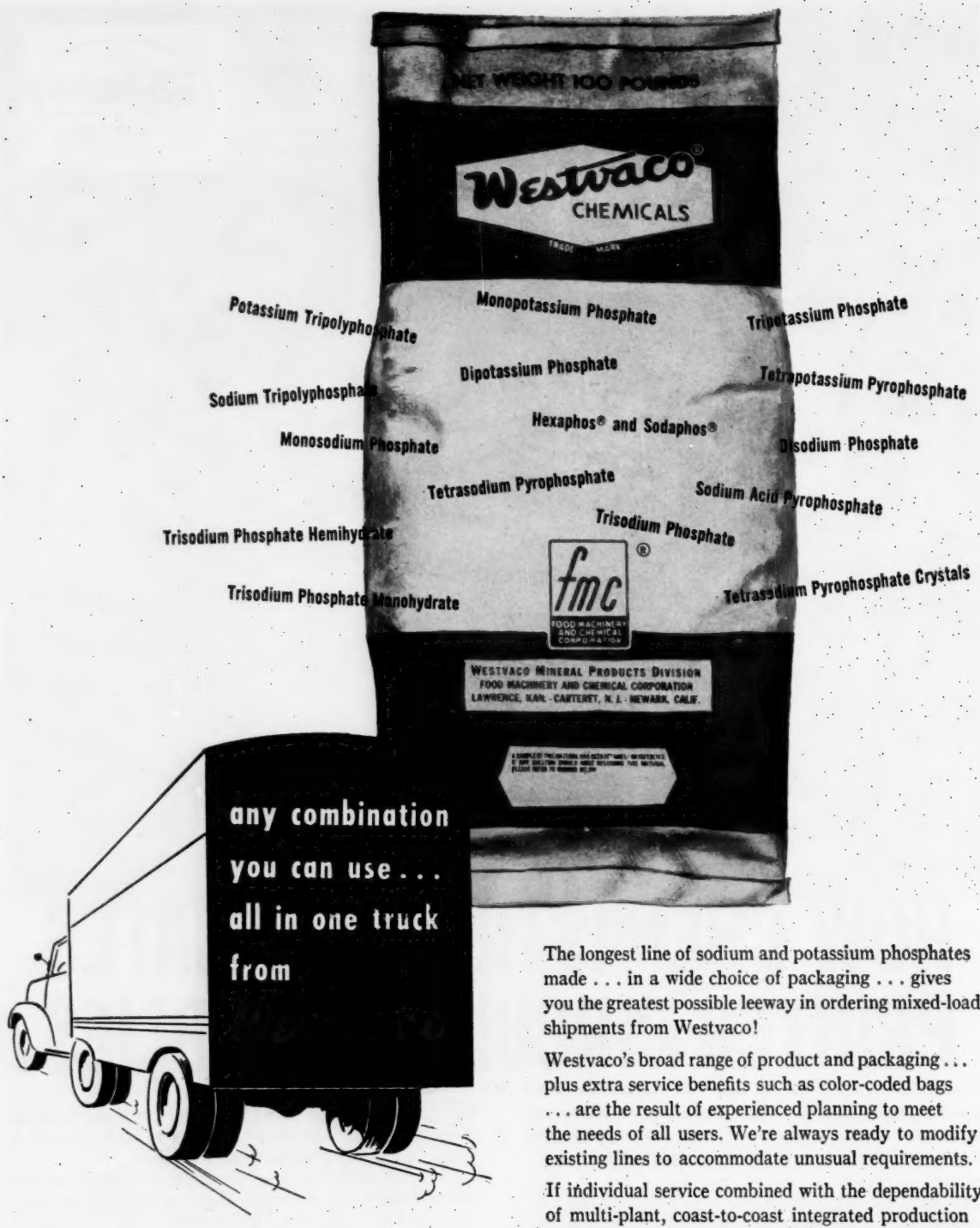

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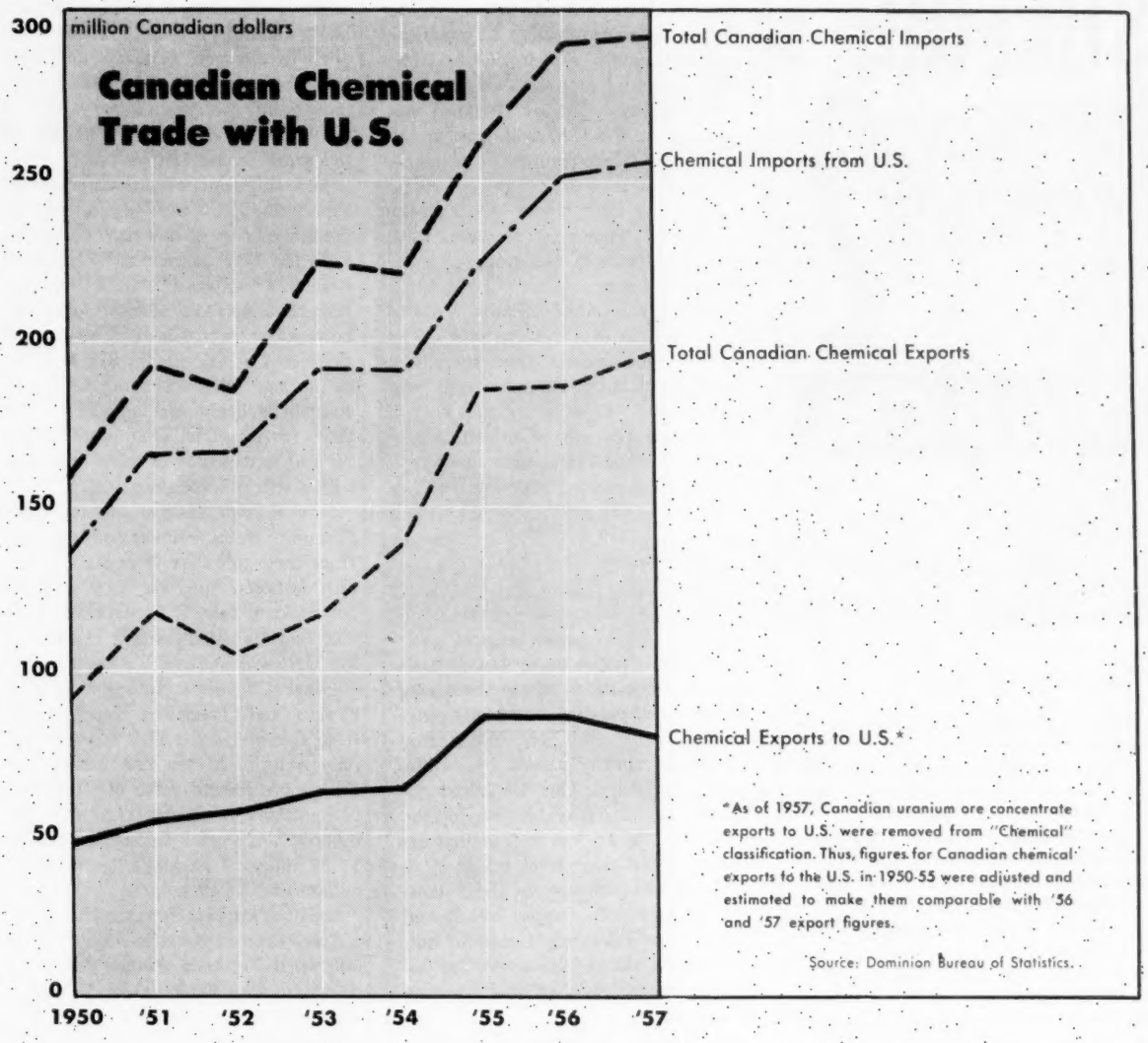

No Place for Politics in Canadian Trade

With Canada's Commonwealth Economic Conference only two weeks away, businessmen on both sides of the border are again taking a hard look at U.S.-Canadian trade prospects for the years ahead.

Though many of the answers will likely emerge from the Montreal conference—beginning Sept. 15—marketers this week had a new benchmark with which to gauge trends in trade between the two nations. Just released are early '58 statistics on Canadian chemical imports and exports. This data, plus a *CW* survey here and in Canada, provide these highlights on the trade situation:

- Canada's recent political stand, which emphasizes a shift of some 15% of the country's trade from the U.S. to Commonwealth nations (*CW, April 12, p. 45*), has so far had little effect on U.S.-Canadian chemical trade.
- Such trade fluctuations as have occurred have resulted primarily from the '57-'58 recession.
- Increasing expansion of Canadian production facilities is expected to have direct, significant impact on U.S. chemical shipments to Canada.

Imports Down: Canadian chemical imports in the first quarter of this year, from all nations, were valued at some $64.5 million,* compared with $72 million in the same period of '57. Chemical imports from the U.S. also showed a similar setback; total value for the first three months of this year amounted to $57.1 million, about $8 million less than in the same months of '57.

Chemical industry representatives of

*All values herein are expressed in Canadian dollars. Current exchange value is about $1.04 in terms of U.S. currency.

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both countries are quick to point out that the drop in chemical shipments from the U.S. reflects both the increasing Canadian production of chemical products and a slowdown of Canadian industrial activity. Consensus is, however, that Canada's chemical imports from the U.S. will pick up in proportion to the resurgence in industrial activity.

Over the long range, U.S. exports to Canada have been growing. Last year, for example, the value of total chemical shipments amounted to $252 million. It was only $135 million seven years ago.

Even on Exports: Total Canadian exports—including shipments to the U.S.—appear to be on an even keel if '57-'58 records are compared. Total Canadian chemical exports were valued at $48.8 million in this year's first quarter, $47.7 million in the same period of '57. Of this, shipments to the U.S. were $22.1 million and $22.9 million in the respective periods.

Plastics Future: One of the highlights of U.S.-Canada chemical trade is plastics. Consensus is that Canada will continue to purchase increasing quantities of plastics—especially polyethylene—and resins, despite increased Canadian capacity caused by rapidly growing demand. One Canadian observer says this may be true for the immediate future, but he feels that the growth trend may level off in 5 to 10 years, that imports of these items can be expected to taper off. It will result from increasing Canadian output, which will become ample for domestic needs, he says, not because of any shift of trade.

Meanwhile, production of Canadian synthetic resins and primary plastics has skyrocketed. Resin output last year was valued at $60.5 million, compared with $19 million in '50. Primary plastic output was valued at $93 million in '57, $39 million seven years ago.

A further boost in output is expected as new plants and expansions come onstream. Canadian Industries Ltd., for example, plans to double polyethylene capacity at its Edmonton plant by '59. Union Carbide Chemicals is also doubling poly capacity at its Montreal East plant. Du Pont of Canada plans a linear polyethylene unit at Sarnia. Shell Oil of Canada began making epoxy resins at Montreal East last month.

Fertilizer Imports Down: A downward trend in U.S. shipments of nitrogen fertilizer to Canada is evident. Reason, of course, is buildup of Canada's domestic sources. Canada's imports of nitrogen fertilizers and solutions from the U.S. for the first three months of this year were valued at $429,000. It was some $556,000 in the same period last year.

U.S. shipments of various grades of superphosphates were up a little in the first quarter of this year, compared with the first quarter of '57; values were $995,000 and $920,000 for the respective periods. Market followers, however, expect that U.S.-to-Canada shipments of phosphates will level off in the near future as more Canadian companies begin making them. This year, for example, Dominion Fertilizer Ltd. is expected to come onstream with a superphosphate plant.

Several new Canadian potash extraction units are now under construction. Once these units are in operation, potash imports from the U.S. will be cut back; in fact, U.S. marketers predict that Canadian potash exports to the U.S. will increase.

Other Chemicals: Imports of antibiotics and medicinal preparations from Canada to the U.S. have varied only a little. In the first quarter of this year shipment value of medicinal preparations from the U.S. was $2 million; antibiotics shipments totaled $1.25 million. Last year's figures: $1.9 million and $1.30 million.

Soda ash imports from the U.S. have suffered severe cut backs—some $224,000 worth has been shipped this year, compared with $869,000 in '57. Main reason: Brunner Mond's soda ash expansion last year.

Canada's caustic soda imports from the U.S. are also backsliding this year, reflecting increased Canadian output and lagging consumption—especially by Canada's pulp and paper industry. U.S. shipment value in this year's first quarter was some $424,000, compared with $865,000 worth last year.

Despite the 'Buy Britain' political stand taken by the new Canadian government, it's difficult to find a single responsible Canadian (or U.S.) chemical spokesman who believes that significant diversion of chemical trade is in the offing. Increased Canadian output and the general slowdown of Canada's economic activity are the really significant factors that bear on U.S.-Canadian chemical markets.

More Mexican Sulfur?

There's a lot of talk in Mexican sulfur circles that another—as yet unidentified—independent U.S. company plans to get into Mexican sulfur production. It would be the fourth U.S. firm to work sulfur in that country.*

Mexican market observers say additional sulfur output could soften prices of exported material in an industry that already shows signs of heavy competition. Although there are now no noticeable price fluctuations, there are trade hints about discounts and freight payment kickbacks.

Cuing the talk about a newcomer are claims by Mexico's Geological Investigation Institute that a 14-million-tons/year, $380-million sulfur business could be developed in the state of Chiapas. The institute says that only 162,000 tons have been exploited to date in that area. It asserts that "the virtual monopoly of the U.S. in international sulfur trade will now be threatened by Mexican production."

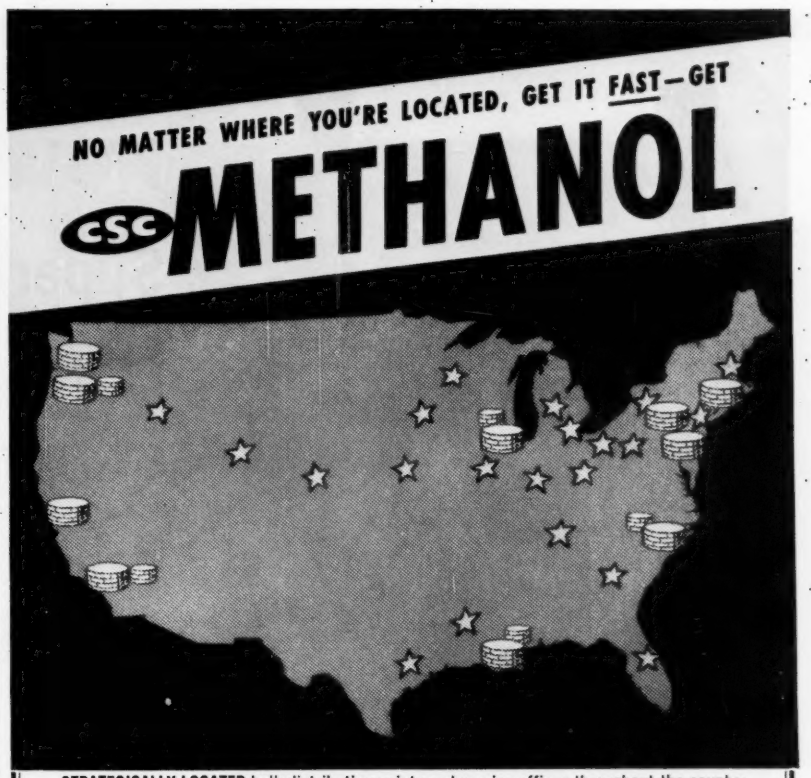
Cheaper Mexican labor, it's pointed out, permits sale of sulfur at $10.50/-ton at the dock in Mexico, compared with $26.50 at the mine in the U.S.

How Much in '58? The Mexican Sulphur Institute reports first-half '58 sulfur production at 629,537 long tons. This indicates a likely total output of close to 1.3 million tons this year. The amount would be upped, however, if Cia. Azufrera Pan Americana—Mexico's top producer—raises daily output to 1,000 tons before year's end.

Pan Americana's sulfur exports last month hit a record 85,509 tons; this month would have been another record-breaker except for Mexico's crippling, six-day railroad strike. The firm had planned to produce 800,000 tons, sell the same amount, and maintain a reserve stock of 600,000 tons this year.

Cia Azufrera Veracruz (Pan Americana's closest competitor and affiliate of Gulf Sulphur) reported a record production in June—26,605 long tons—that topped any previous month by 5,000 tons. Other producers are Exploradora del Istmo (Texas Gulf affiliate) and Petroleos Mexicanos (Pemex), sour-gas sulfur producer.

*Besides three sulfur producers now in Mexico, two others—Texas International Sulphur (with Mexican affiliation) and Freeport Sulphur—have drilling concessions or are setting up production facilities.



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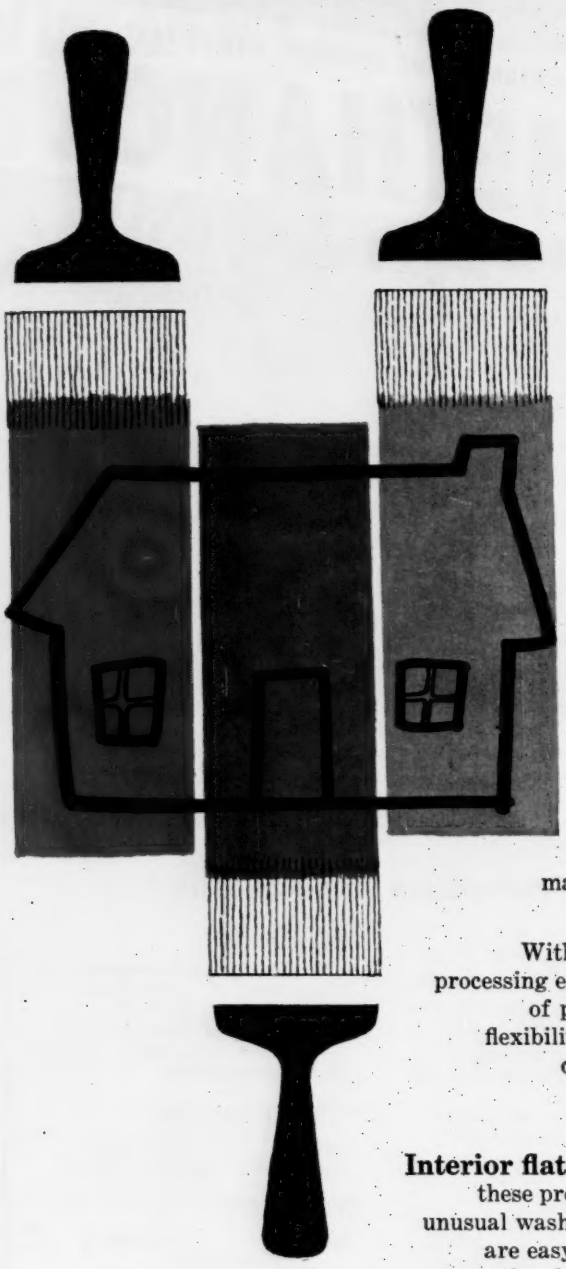

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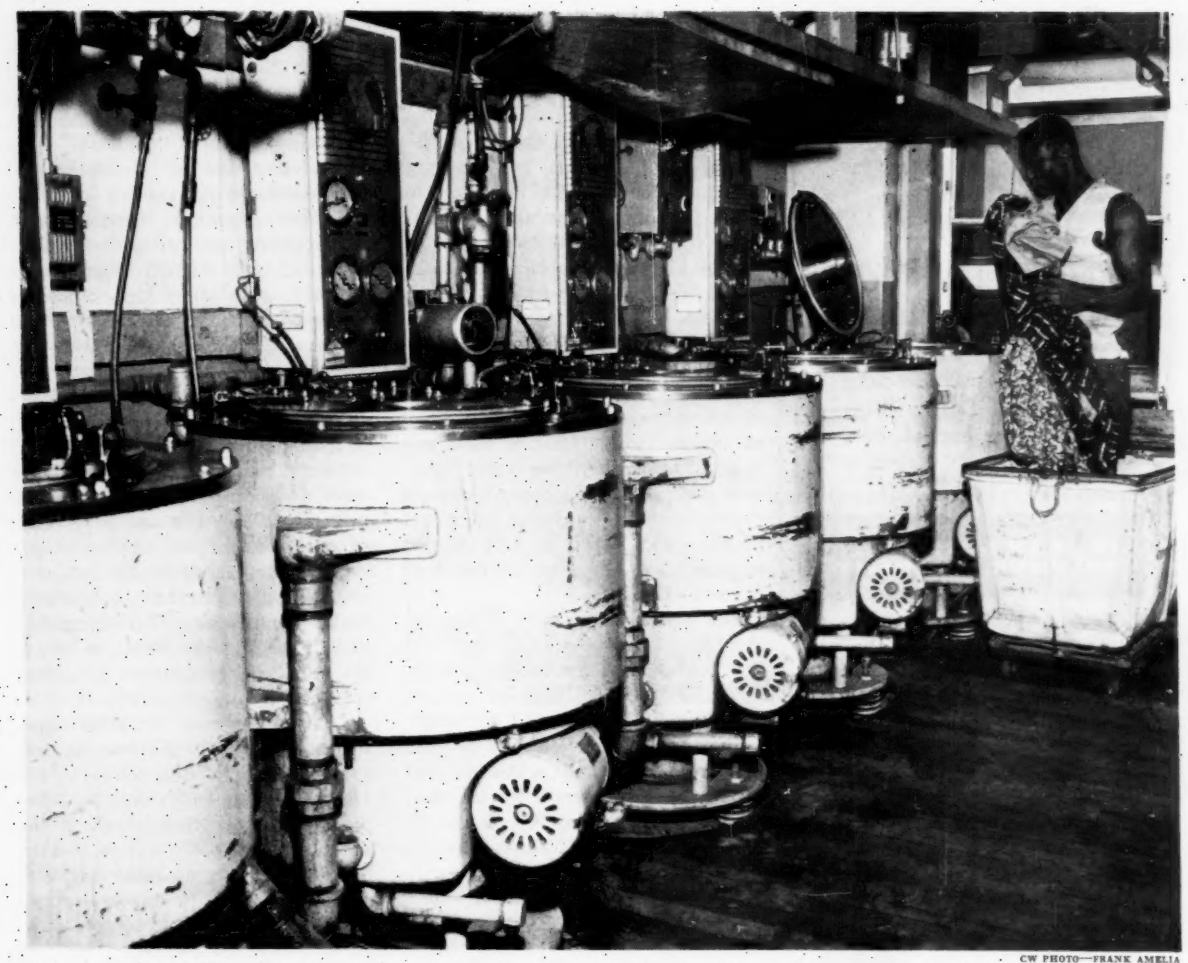

CW PHOTO—FRANK AMELIA

'Dry washers' like these perchlorethylene-using units help boost solvents sales to $50 million/year.

Cleaners: $85-Million Chemical Customers

Dry cleaners buy $85 million worth of chemical specialties each year. And business is growing 3% annually.

Solvents are biggest sellers—$50 million worth. About 60% of this goes for Stoddard solvent, the rest for perchlorethylene. But positions may be reversed by '65.

Giving "perc" its boost: small suburban plants. They're also prime customers for the whole line of dry-cleaning specialties.

Makers of specialties chemicals for dry cleaners are eyeing a new cleaning plant going up in suburban Elmsford, N.Y., this week. Designed to handle 3,000 lbs. of clothes each week, the new establishment will likely need only $100 worth of chemicals every week. But it's the sort of plant that's becoming the backbone of the $85-million/year dry-cleaning specialties business.

Last year, the nation's 30,000 cleaning plants, doing $1.5 billion worth of business, bought these materials: perchlorethylene valued at $21 million; Stoddard solvent, $29.2 million; synthetic detergents, $20 million; spotting compounds, $8 million; filter aids, $4 million; water repellents, $2 million; mothproofers, $750,000. And business is growing at a 3%/year rate.

Smallers Are Bigger: In recent years, specialties suppliers have seen a change in customers. The small neighborhood plant—one that offers laundering as well as on-the-spot cleaning—is squeezing out the small tailor shops that depend upon large wholesalers to do their cleaning. Last year,

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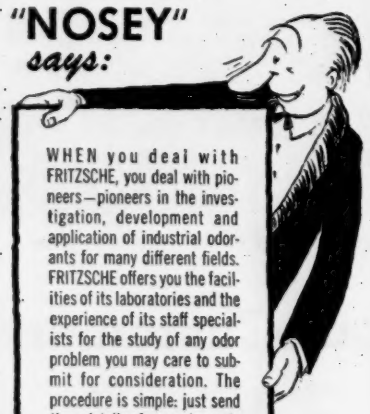

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19% of the nation's tailor shops closed doors. But the business loss to large wholesaler-cleaners was even greater, since some tailor shops had put in their own cleaning equipment.

Thus, the plight of the wholesaler—the big plant operator—is steadily becoming worse.

Dry-cleaning plants are changing from one-man, one-shop operations to chain operations managed by one man. It's not unusual today to have one man running 20 plants and specifying the chemical purchases for all of them.

But this evolution is just starting. For the most part, dry-cleaning plants are still individual businesses. Of the 30,000 shops, some 11,000 gross only about $400/week. Most of these are in small towns that have static populations, so their volume won't change appreciably. The big change will come from the 15,000 that do 90% of the business—and buy 90% of the dry-cleaning chemicals.

The Upset: One thing hastening change in the makeup of the industry has been the switch to perchlorethylene. Last year, dry cleaners bought an estimated 141 million lbs. of "perc" (known as "synthetic solvent"). In '53, they bought 110 million lbs. As the number of perc users increases, the users of the old stand-by, Stoddard solvent, dwindles. Five years ago, Stoddard solvent users outnumbered perc users two to one. Today, 40% of the cleaners use perc. And by '65, according to top supplier Du Pont, at least 60% of the plants will be using perc.

The Reason Why: There are several reasons for the increase in number of perc-using plants: perc units require less floor space than Stoddard units; the small shop can do the job on-the-spot, cater to the demand for fast service; the shorter cleaning cycle cuts down time; the smaller perc plants are fairly inexpensive—and financing is relatively easy; because the units are automatically operated, there's a labor saving; because the material is nonflammable, a cleaner has fewer zoning restrictions, lower insurance rates and simplified housing; perc units are easier to install than are Stoddard units.

Perc Leaders: Biggest suppliers of "synthetic solvent" are Du Pont and Dow. They probably have 70% of the business. Battling for the remainder are Stauffer Chemical Co. (New York); Columbia-Southern Corp. (Pittsburgh) and Diamond Alkali Co. (Cleveland). And a new contender is on the way—Frontier Chemical, division of Union Chemicals and Materials Corp., will have its now-abuilding perc plant in Wichita, Kan., onstream this November.

Practically all the perc now sold moves through the nation's some 150 dry-cleaning-laundry jobbers. From these jobbers, the average dry cleaner buys each year a dozen 55-gal. drums of perc, pays about $106/drum—of which $20 goes to the jobber. Each drum will clean about 6,000 lbs. of clothes.

Drawbacks: Perc has these drawbacks: it is heavy (13.5 lbs./gal) and many jobbers told *CW* their $20 markup seems little return for the labor needed to push an 800-lb. drum on and off delivery trucks. Jobbers would like to see perc suppliers ship it direct from central warehouses—letting them concentrate on smaller, higher-profit items. Oil companies have solved the problem by setting up bulk-delivery systems resembling fuel oil routes.

Growing Imports: Imported material is a growing threat to domestic suppliers of perc. Both Solvay & Cie (Brussels, Belgium) and Pechiney (Paris) are now shipping perc to the U.S.—selling it $10-15/drum cheaper than are U.S. companies. Just how much material now comes into the U.S. is unknown, but some guess it to be about 500,000 lbs./month. Most of this has been sold to small distributors.

Stoddard Future: Although "synthetic solvent" is moving up fast, Stoddard is still the top-selling dry-cleaning solvent. Last year, 136 million gal. of it went to dry cleaners, compared with 110 million gal. in '53. Buying most of the Stoddard are the larger cleaning plants that have the volume and space to process clothes in the large Stoddard units and can take advantage of its low cost. It sells for 20¢/gal.—about one-tenth the cost of perc. (One drum of perc, however, cleans the same poundage of clothes as five drums of Stoddard. The perc is reclaimed; Stoddard is not.)

Stoddard Sellers: Most of the major oil companies offer Stoddard solvent to cleaners. Of the some 30 Stoddard suppliers, among the principal companies are: Anderson-Prichard Oil

Corp. (Oklahoma City, Okla.); Standard Oil of New Jersey; Standard Oil of Indiana; Standard Oil of California; Gulf Oil Corp.; Shell Oil Co.; Socony Mobil Oil Co. and Sinclair Refining.

A small amount of a petroleum solvent called 140-F and some carbon tet is used by dry cleaners, but the annual 5-million and 1-million-lb. respective usage of these chemicals is hardly a threat to perc and Stoddard.

Detergents on the Move: Synthetic detergents were seldom used in dry cleaning until fairly recently. But with the introduction of the so-called "charged system" some seven years ago, syndet use has zoomed. From 5 million lbs. in '50, the consumption of detergents by dry cleaners has increased fourfold to about 20 million lbs. this year. Most of this is liquid detergent, containing 50% surface-active agents. The rest is a solvent (or cosolvents or both). A cleaner pays about $4/gal. for standard syndets. The lighter-colored, more concentrated products, which sell for $6-8/gal. are becoming more popular, however. (Soaps no longer have much of a market in dry cleaning; they're used by less than 5% of all dry cleaners.)

The ability of detergents to remove water-soluble soil from garments has made them particularly useful to cleaners. By employing syndets, cleaners avoid the need for spotting compounds—and more important—the need for a "spotter" employee.

Sputtering Spotter Sales: Sales of spotting compounds haven't increased at all over the '54 $8-million sales mark. Before detergents went to big-volume use, an estimated 50-60% of the dry cleaner's work needed spotting. Today, only about 10-15% of garments need it. Sale of prespotters (concentrated detergents) is down an estimated 75% from '54. Sales of other spotting compounds—rust removers (dilute hydrofluoric acid), digesters (enzymes) and paint-and-grease removers (mixtures of castile soap, chloroform, acetone and methanol)—are holding their own.

Biggest companies in the detergent and spotting field are R. R. Street & Co., Inc. (Chicago); Adco, Inc. (Sedalia, Mo.); Caled Products Co., Inc. (Brentwood, Md.); Emery Industries, Inc., Sanitone Division (Cincinnati); Davies-Young Soap Co. (Dayton, O.); and Nu-Pro Mfg. Co. (St. Louis). Al-

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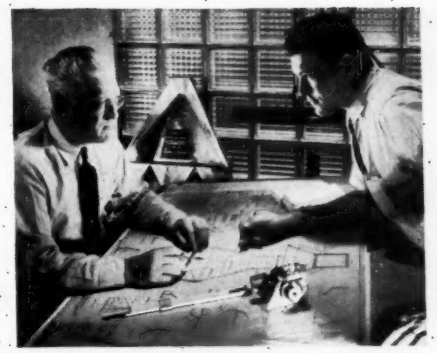

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though there are several hundred local companies in the field, these six companies do at least 60% of the business.

These companies are all formulators and sell through jobbers, except Sanitone and Adco, which sell direct. Jobber markup on detergents and spotting compounds is around 40%.

In addition to these companies, Pennsalt Chemical Co.'s Erusticator is the leading rust remover; and Wallerstein Co., Inc. (New York), probably has the top-selling enzyme spotter.

For Rainy Days: About 75% of the nation's dry cleaners offer water repellency treatments. Dry cleaners that offer this service buy, at most, 20 gal./year of raw material, pay about $14.50/gal. for it. By far the majority (at least 85%) of these water-repellent products are chlorinated wax-resin emulsions. Silicones, although not yet major market factors because of their high price, are moving up. Water repellents are offered by practically all the makers of dry-cleaning detergents.

Moth Chasers: Sales of mothproofing compounds haven't increased much in the last eight years. These compounds, most of them liquid concentrations of DDT or silicofluorides, were popular with dry cleaners in the early '50s, as an inexpensive promotional item, but that popularity has dwindled. Now about one-third of all cleaners offer mothproofing. They pay about $4/gal. for these products.

Filter Powders: All cleaners use filter powders (diatomaceous earth) and activated carbon. Last year, cleaners bought more than 60 million lbs. of filter powders, activated carbon and sweeteners (treated natural clays). Cleaners use about 1 lb. of filter powder for every 100 gal. of solvent and pay $3.35 for a 50-lb. bag, which lasts about a week. Activated carbon—a small amount is added to the solvent system to remove dyes, other impurities—is packaged in 1- and 2-lb. bags, retails for 35¢/lb. Sweeteners, on the other hand, sell for about $6/-50-lb. bag.

Johns-Manville (New York) is biggest by far in the filter powder field—has about 90% of the market. Manville's top competitor is Dicalite, division of Great Lakes Carbon Corp. Atlas Powder is probably biggest in the activated carbon field.

Sizings Grow: During recent years, "high fashion" cotton has substantially

boosted the dry-cleaning market for sizings. It's a growing market, but it's difficult to peg the sales volume of these materials. Market estimates vary from $2 million to $10 million/year. Sizing compounds (synthetic resins, some vegetable gums) are used in very small quantities—6-oz. size for 100 lbs. of garments. Among the principal suppliers of sizings are the six leading detergent makers plus Wallerstein, Stamford and Eaton Chemical & Dyestuff Co. (Detroit).

A Dwindling Market: While sizing is growing, dyeing is almost a thing of the past with cleaners, except in a few large dry-cleaning plants. Most cleaners send the work out; 27 large dyer-wholesalers do about all the nation's redyeing. A large dyeing house estimates that $10 million is spent yearly on clothes dyeing. The market has been steady over the past five years.

Swinging Over: Another dry-cleaners' service that's likely to disappear is suede and leather refinishing. Although this business is still in the wholesale-or-retail controversy, as dyeing once was, it, like dyeing, is gradually becoming a job for wholesalers.

Despite all the publicity that has been given to minimum-care clothes, the wash-and-wear materials so far haven't hurt the dry-cleaning business as much as some cleaners thought it might. But perfection of some materials might cause real inroads in the future.

But until that time comes, selling to aggressive dry cleaners, will mean bustling business for those specialties makers who recognize—and exploit—the changes now going on.

PRODUCTS

Damping Fluid: A new flotation-damping fluid with density of 2.5/-100 F and 2.4/160 F is offered by Fluoro-Chem Division of Halocarbon Products Corp. (Hackensack, N.J.). The oil is a bromotrifluoroethylene polymer with closely controlled molecular weight and weight distribution. It's produced in a wide range of viscosities up to approximately 5,000 centistokes at 165 F. Fluor-Chem says the oil—the densest available—permits further instrument miniaturization in such applications as gyroscopes for guided missiles.

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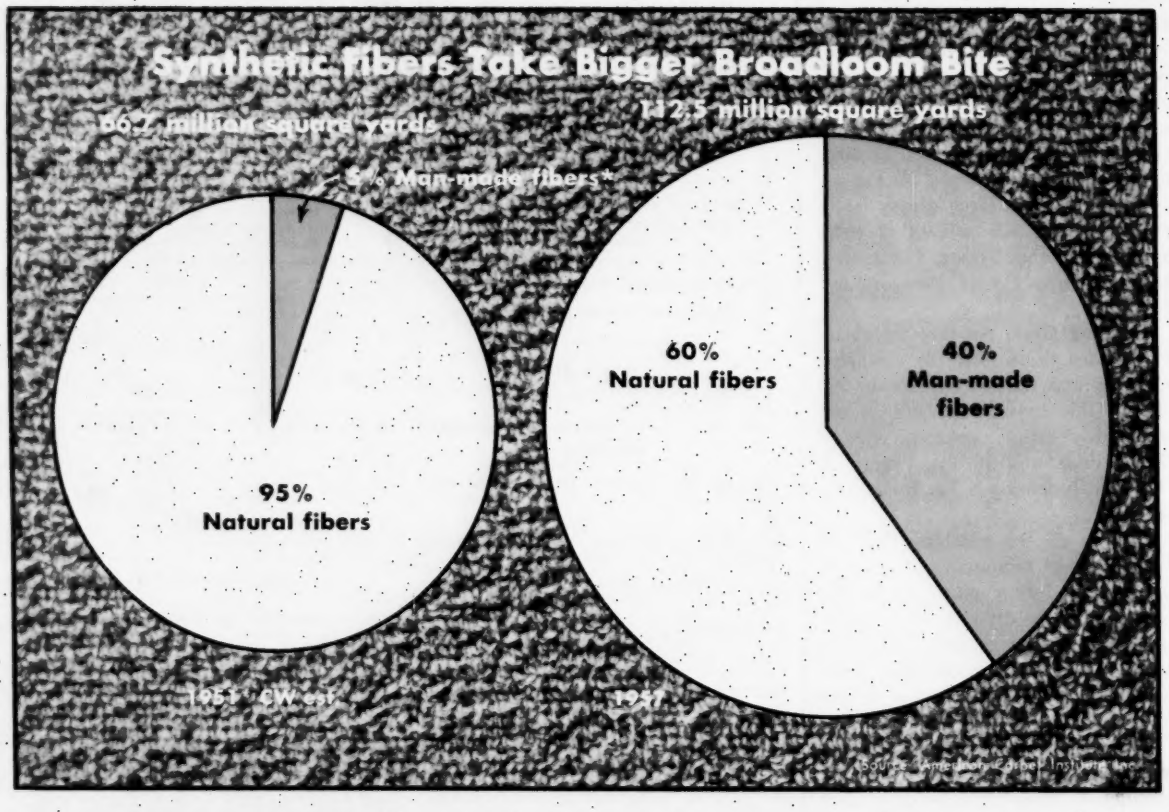

Synthetics, Natural Fibers Go to the Mat

Man-made fibers are more than just a novelty in the floor-covering industry. Last year, of the 112.5 million sq. yds. of broadloom produced, close to 45 million sq. yds. were manufactured from man-made fibers. Some 89% was made with rayon, about 10% with nylon, the remainder with relative newcomers Acrilan and dynel.

Just seven years ago, broadloom output totaled 66.7 million sq. yds., of which only 5% was made with synthetic fibers, mostly rayon.

Further underscoring the trend toward use of man-made fibers in floor carpeting were the recent price cuts on carpet-grade nylon by Du Pont and Industrial Rayon Corp. The reductions were aimed at making nylon competitive, pricewise, with other carpet fibers —including imports—so that its market share might be enlarged.

One market follower of the synthetic fiber industry estimates that 18 million lbs. of nylon will be channeled into floor coverings this year, compared with about 15 million lbs. last year and about 11 million lbs. the previous year.

Concern of both the carpet industry and the fiber producers is some mills' use of what producers say are substandard grades of synthetic fibers in floor coverings. This has resulted in some market-damaging consumer dissatisfaction with the wearing qualities of man-made fiber carpets.

MONDAY

4

AUG. 1958

– APPOINTMENTS –

JULY 1958

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SEPT. 1958

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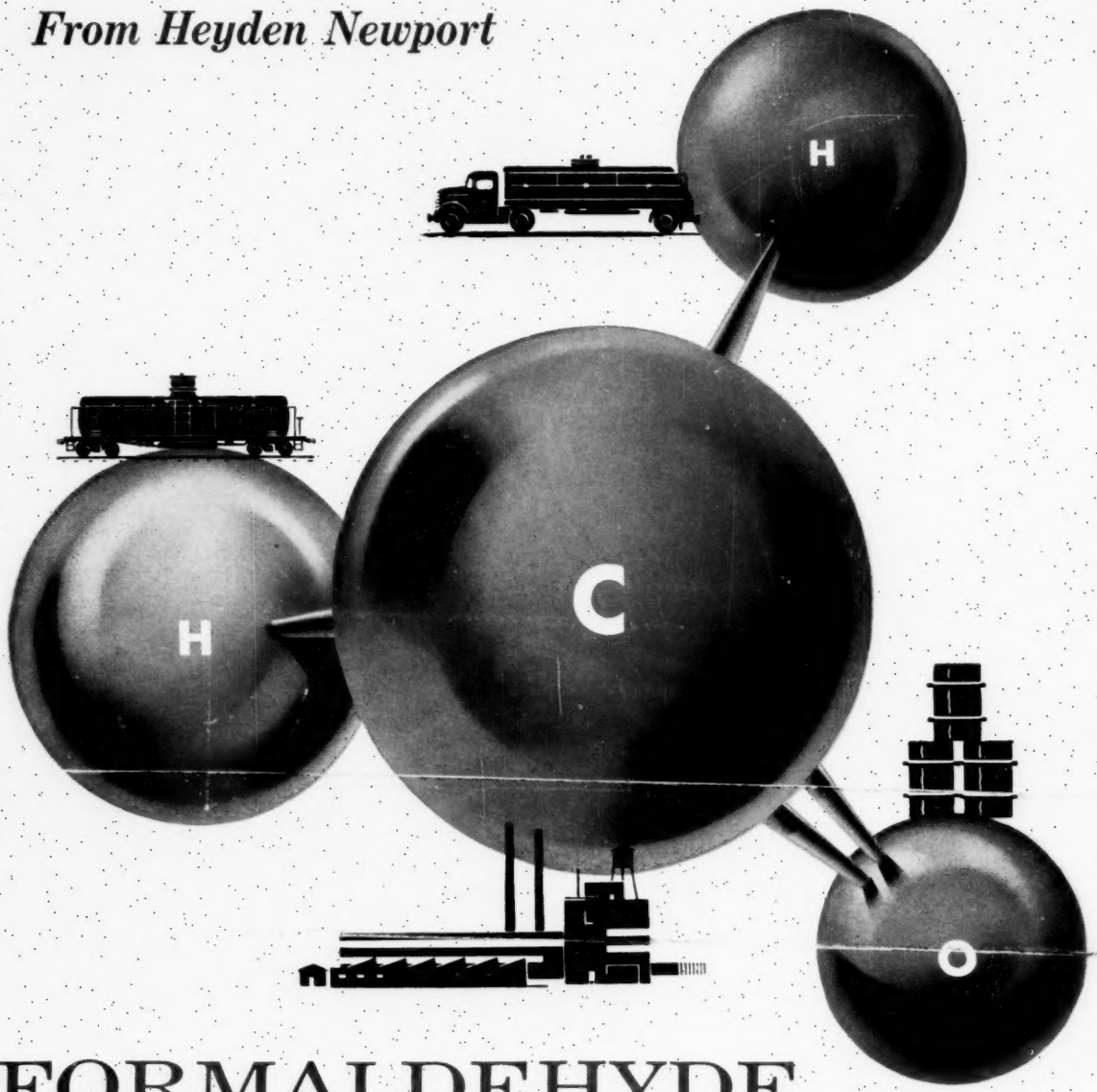

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